DOMESTIC ENGINEERING

PUBLISHED EACH SATURDAY
BY
Domestic Engineering, (Inc.)

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MAIN OFFICES:
49-53 NORTH JEFFERSON STREET, CHICAGO, ILL.

SUBSCRIPTION RATES:

United States, Cuba and Mexico.....$1.00 a year
Canada.....$2.00 a year
Other Foreign Countries.....$3.00 a year
12 shillings. 12 marks. 15 francs.
Single copies of current issue, 5 cents; copies of back numbers, 10 cents each.

REMITTANCES.—Subscriptions are payable in advance, and remittances should be made by check, Chicago draft, postal or express money order, in favor of DOMESTIC ENGINEERING.

CHANGE OF ADDRESS.—The old address should be given as well as the new, and notice should be received a week in advance of the desired change.

NOTICE TO ADVERTISERS.

Copy and cuts for advertisements intended for a particular issue should reach the office of DOMESTIC ENGINEERING on Wednesday of the previous week if it is desired that a proof of the advertisement shall be submitted. New advertisements can be received up to noon of Wednesday of the week of issue, but no proof can be shown.

Entered as Second-Class Matter at the Post Office at Chicago, Illinois, Under Act of Congress of March 3, 1879.

Member of the Chicago Trade Press Association.
Member of the Federation of the Trade Press Associations of the United States.

Whole No. 865. Vol. XLVIII. No. 2. Chicago, July 10, 1909.

Suggestion:
Cut out; frame neatly; put in show window; change weekly.

THE "QUALITY" MAN

may snap his fingers in the face of dull business. He has installed the best goods, received a reasonable profit, has been able to pay his bills, and does not have to have contracts at losing prices to keep the place running. His customers are satisfied and when they want work done they come to him as a matter of course, because they have learned that he does good work, uses none but guaranteed goods bearing the maker's name, and they are content.

Regulation of Plumbing in a Ready-Made City

It seldom occurs that an entirely new city is constructed from virgin soil; but it has so occurred with the town of Gary, Indiana, the great steel producing center where the United States Steel Corporation asserts it can produce its products $5 per ton cheaper than in any other manufacturing center of the United States; a fact which has sent the common stock of that corporation from 30 cents to nearly 70 and which has established the future of that excellent manufacturing company as no other one fact could possibly do. We have been greatly interested to observe what kind of plumbing regulations would be established in the new city and we are now in possession of the "Building and Plumbing Ordinances of the Town of Gary" as enacted up to June, 1909.

Sewers and Drains.—The sewers and drains are placed under the supervision and charge of the Department of Buildings and the Commissioner of Buildings has power to prescribe the mode of tapping and opening such sewers and drains, and no work of that character can be done without a written permit from him. It is provided that no kitchen or greasy waste shall be emptied into the sewer or drains directly but that it must be intercepted by a brick, concrete, or cast iron catch basin.

Plumbing.—That portion of the ordinance governing plumbing provides for an inspector of plumbing and house drainage, who shall be a practical plumber, a resident of the town and who shall have passed the examinations held by the Board of Plumbing Examiners, which shall consist of the Town Board, Town Engineer, Plumbing Inspector and one master plumber selected by the president of the Board. Persons who desire to engage in the business of plumbing must first pass this examination and pay $5.00 as a fee, **the certificate to run only when he shall have established a place of business in the town.** Unsuccessful applicants may file applications for re-examination after three months. A license to follow the occupation of contracting plumber requires an indemnifying bond of $2,500 and costs $200 to secure. Licenses expire on the last day of December each year and may be renewed upon the payment of a fee of $100. This ought to insure a fair grade of plumbers.

Permits for everything except minor repairs are required and the fee is $1.00 for each sink, closet, bathtub, lavatory, urinal, laundry tray, and other fixtures to be installed, but cellar drains are not classed as fixtures. The ordinance specifies that repairs shall not be construed as including any new or vertical line of soil, waste, vent or leather pipes.

Material Permitted.—House drains within and to a

distance of three feet outside of the exterior walls of a building shall be of extra heavy cast iron pipe. All soil and waste pipes must be of extra heavy, cast iron or lead, all revents must be extra heavy soil pipe, standard galvanized iron, or extra light lead pipes.

Vents.—Each sewer connection with laterals must have a cast iron pipe not less than 4″ in diameter, carried not less than 2 feet above the roof of the building. The vent pipe or soil pipe passing through the roof, if less than 20 feet from any window or opening must be carried five feet above the highest window or opening or it may be connected into the soil pipe at no less than 3 feet above the highest fixture.

All fixtures must be back vented with a vent pipe the same size as the trap except closets and slop sinks which, when less than five feet from the stack, shall require no revent, but must be of not less than 2″ where they are more than 5 feet and less than 20 feet from the main stack; where more than 20 feet from the main stack they must have an independent 4″ stack. When more than one fixture connects to the same vent, the vein must be increased at least one size every twenty feet. All revents must be made by what is known as the continuous venting system and no trap shall be vented from the crown. All revents must be of extra heavy soil pipe, standard galvanized iron or extra light lead.

House Drains.—House drains must not be less than 4″ in diameter and must have a fall of not less than one foot in fifty. Changes in direction must be made with regular fittings and where connected with horizontal pipes shall be connected with Y's or sanitary tees.

Soil Pipe.—All soil pipe and fittings shall be extra heavy and stacks must extend at least two feet above the roof and sizes are not specified.

Sizes of Waste Pipes.—Wastes for bathtubs, laundry trays, sinks and urinals cannot be less than 1½″, for closets and slop hoppers not less than 4″, for lavatories not less than 1¼″. Horizontal pipes must not enter in to heels of bends. Each bathtub shall have a lead drum trap. Each kitchen sink, laundry tray or other fixture through which greases may pass must have a "Sieben" or equal, grease trap.

Water Closets.—The ordinance provides that every toilet room must open to the outer air or be ventiled to the outer air duct or shaft. **All water closets other than siphon and siphon jet are forbidden. Enameled closets are permitted.** Wood casing is not allowed. Tanks are required with not less than three gallons flush.

These are some of the interesting features of the ordinance. There are other regulations which are found in almost every plumbing ordinance, and do not call for particular attention.

All That Was Left.

Church—"Did you see the hotel fire?"

Gotham—"Yes."

"Totally destroyed, I suppose?"

"Everything but a few sheets of writing paper on which was printed in large letters: 'This hotel is absolutely fireproof.'"—Yonkers Statesman.

The Determination of the Sizes of Pipes for Hot Water Heating

III*

By F. E. Giesecke, M. E.

Professor of Architectural Engineering and Drawing, Agricultural and Mechanical College of Texas.

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The friction-head* due to one elbow may be expressed algebraically thus: $f\,h_e = k\,\frac{v^2}{2g}$ in which k is a constant which must be determined by experiment.

Professor Bellinger made tests at Cornell University to determine the friction-head of a ½″ elbow, for velocities ranging from 2 to 20 feet per second; the values of k, as determined by these tests, varied from .633 for a velocity of 2 feet per second to 1.185 for a velocity of 20 feet per second. (Mechanics of Materials, Church, page 730.)

Professor Rietschel uses .5 as the value of k in his calculations (Leitfaden—referred to above, page 219).

Dr. Fischer places the value of k at from .3 to .5 (Handbuch—referred to above, page 182).

We may, according to the authorities cited, assume .5 as a proper value of k for the low velocities used in hot water heating; the friction-head due to one elbow is, therefore, $.5\,\frac{v^2}{2g}$.

We are now prepared to find the friction-head due to one elbow; for example, the friction-head of 1″ elbow for water flowing at a velocity of 26/100 feet per second is found by substituting in the formula. $f h_e = .5\,\frac{v^2}{2g}$, thus: $\mathbf{fh_e} = .5\frac{.26 \times .26}{2 \times 32.2} = \frac{5}{10{,}000}$ feet.

The length of a 1″ pipe having the same friction-head as one 1″ elbow (the velocity being 26/100 feet) is found by dividing the friction-head of one elbow by the friction-head of one foot of pipe, thus:

$$\frac{5}{10{,}000} \div \frac{7}{10{,}000} = \frac{7}{10} \text{ feet approximately.}$$

In general, the length of a pipe, expressed in feet, having the same friction-head as one elbow, may be found by placing the friction-head of a pipe of length e and diameter d, in feet, equal to the

*The two first installments in this series of articles were published in the issues of May 29 and June 12, 1909. These back numbers can be obtained for 10 cents a copy.

* The internal diameter of a 1″ pipe from Table 1.

friction-head of one elbow and solving for l, thus:

$$f \frac{l}{d} \frac{v^2}{2g} = .5\frac{v^2}{2g} : l = \frac{5\,d}{10\,f} \text{ feet.}$$

Since f is a function of d and v, l is also a function of d and v.

The values of f can be obtained from the diagram of Fig. 3 and the corresponding values of l calculated.

This was done and the results are shown by the elbow diagram in the upper right corner of Plate 1.

We have found that the pressure-head is $\frac{211}{10{,}000}$ feet and have seen that the friction-head must equal the pressure-head. In this case, the friction-head is due to a pipe 72 ft. long and to resistances which are equal to that of 13 elbows.

Let us assume a 1" pipe; we have found that the velocity would be 26/100 feet per second, that the friction-head, per foot of pipe, for this velocity, in

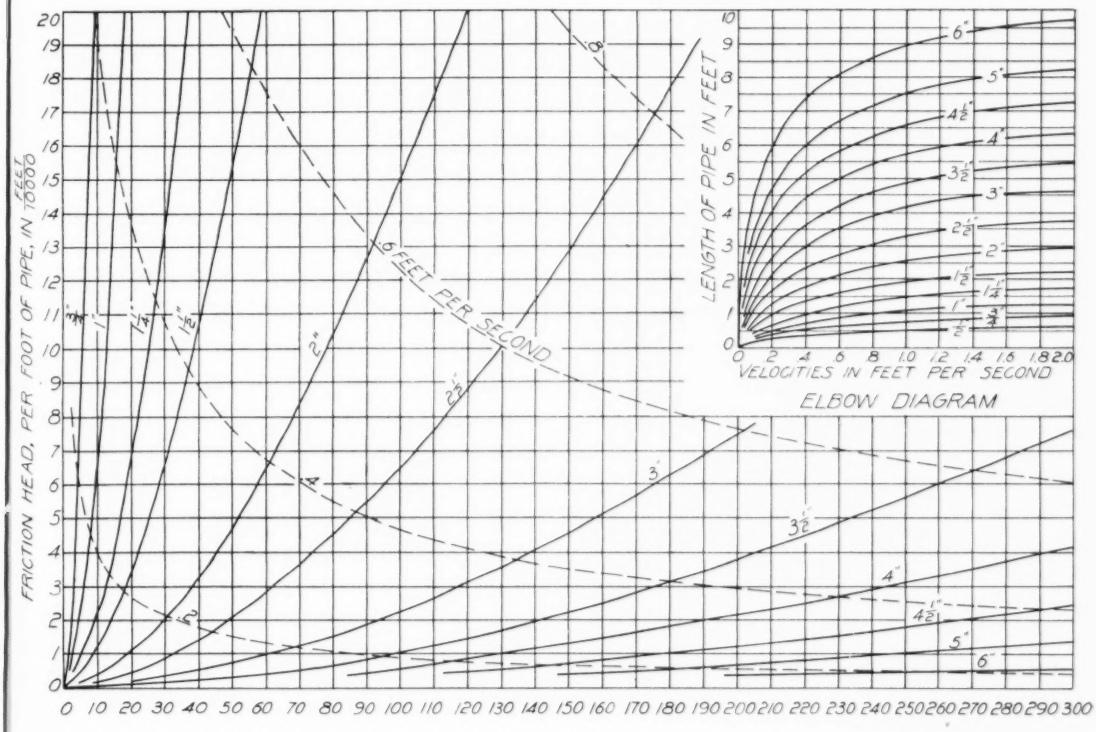

FRICTION HEAD, PER FOOT OF PIPE, IN FEET.
6 FEET PER SECOND
LENGTH OF PIPE IN FEET
VELOCITIES IN FEET PER SECOND
ELBOW DIAGRAM
HEAT CONVEYED, PER HOUR, IN 1000 B.T.U.,
THE DIFFERENCE IN TEMPERATURE OF THE WATER IN THE SUPPLY AND RETURN PIPES BEING 30° F.

Plate 1.

To illustrate the use of this diagram:—The value of l, for a 1" pipe having the same friction-head as a 1" elbow, when the velocity of the water is 26/100 feet per second is determined by finding 26/100 on the velocity scale at the bottom of the diagram, tracing from there a vertical line until it intersects the curve marked 1", and then tracing, from that point, a horizontal line to the left margin, and reading the value of l by the scale shown; in this case, about 7/10 feet.

We are now prepared to determine the size of the pipe necessary for the heating system shown in Fig. 1.

a 1" pipe is 7/10,000 feet, and that the friction-head for a 1" elbow, for this velocity, is practically the same as for a 1" pipe 7/10 feet long.

The total friction-head is, therefore, $\frac{7}{10{,}000}$

$$(72 + \frac{7}{10}\ 13) = \frac{567}{10{,}000} \text{ feet.}$$

As this is more than twice the pressure-head, the pipe is too small. If a 1" pipe were used, the result would be that the radiator would give off less than 10,000 B. T. U., or that the difference between

the temperatures of the water in the supply and return pipes would be greater than 30°.

Since a 1″ pipe is too small, we must try a larger size by calculating the friction-head corresponding to the same, as was done for the 1″ pipe.

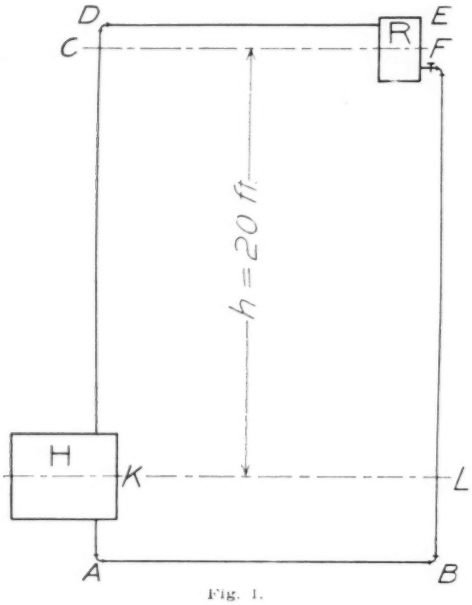


Fig. 1.

The calculations to determine the friction-heads are rather long; to simplify this work, the diagram shown on Plate 1 was constructed.

To illustrate the use of this diagram, let us check the calculation for the 1″ pipe and let us then deter-

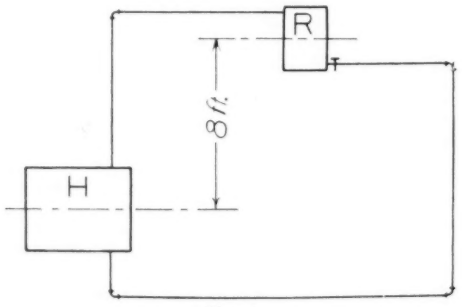


Fig. 4.

mine the proper size of the pipe, for the system shown in Fig. 1, by means of the diagram.

Find 10,000 B. T. U. on the horizontal scale at the bottom of the diagram, follow the vertical line, drawn through this point, until it intersects the 1″ pipe curve; note that it intersects this curve between the two velocity curves which represent respectively, velocities of 2/10 and 4/10 feet per second at a point which corresponds, approximately, to a velocity of 26/100 feet per second; from this point trace a horizontal line to the scale of friction-heads at the left of the diagram and read the friction-head; about 7/10,000 feet in this case, which is the same as that calculated above.

To determine the proper size of the pipe required for the system shown in Fig. 1, begin by assuming an 1¼″ pipe and determining the corresponding friction-head.

From the diagram for 10,000 B. T. U. and a 1¼″ pipe, the velocity is a little less than 2/10 feet per second, and the friction-head is about 2¼/10,000 feet per foot of pipe.

From the elbow diagram, for a velocity a little less than 2/10 feet per second and a 1¼″ pipe

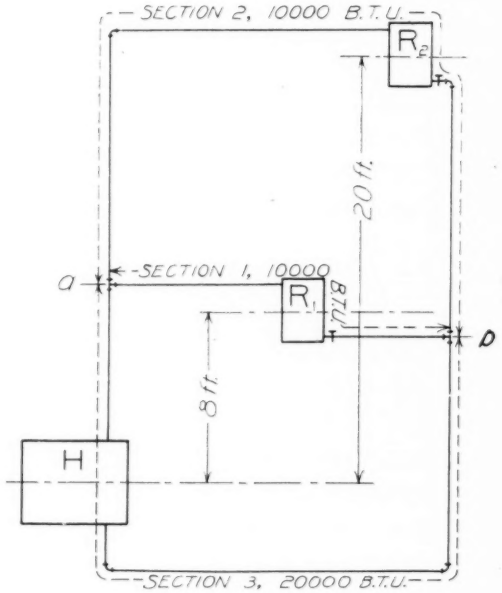


Fig. 5.

the value of 1 is about 6/10 feet for one elbow and therefore the length of a 1¼″ pipe having a friction-head equal to that of 13 elbows is $\frac{6 \times 13}{10} = 8$ feet approximately.

The total friction-head is, therefore, $\frac{2\frac{1}{4}}{10{,}000}$

$(72 + 8) = \frac{162}{10{,}000}$ feet.

As this is 49/10,000 feet, or 23% less than the pressure-head this pipe could be used with the re-

sult that more heat than 10,000 B. T. U. would be conveyed to the radiator, or that the difference between the temperatures of the water in the supply and return pipes would be less than 30°.

To make the friction-head exactly equal to the pressure-head, a portion of the 1¼″ pipe must be replaced by a smaller pipe, say a 1″ pipe.

From the diagram it appears that for 10,000 B. T. U. and a 1″ pipe the unit friction-head is 7/10,000 feet, *i. e.*, 4¾/10,000 feet more than for the 1¼″ pipe; for every foot of 1″ pipe used instead of 1¼″ pipe there is, therefore, an increase of 4¾/10,000 feet; since the friction-head is to be increased 49/10,000 feet we must use 10 feet of 1″ pipe.

The pipe necessary for the heating system shown in Fig. 1 consists, therefore, of 10 feet of 1″ pipe and 62 feet of 1¼″ pipe with thirteen elbows or their equivalent in the 1¼″ pipe.

Example 2.—Let it be required to determine the size of the pipe necessary to supply the radiator R shown in Fig. 4, with 10,000 B. T. U. per hour from the heater H, the difference in temperature of the water in the supply and return pipes being 30°.

The only difference between the heating system shown in Fig. 1 and that shown in Fig. 4 is that in the former case the center of the radiator is 20 feet above the center of the heater and in the latter case only 8 feet above it. Fig. 1 represents a radiator on the second floor and Fig. 4 represents one on the first floor connected to a heater in the basement.

For the system shown in Fig. 1 it was found that 10 feet of 1″ pipe and 62 feet of 1¼″ pipe are necessary. For the system shown in Fig. 4 a larger pipe will probably be needed because the pressure-head is much smaller and because the friction-head must be reduced correspondingly; the pipe shown in Fig. 4 is 24 feet shorter than that shown in Fig. 1; this reducing of the length of the pipe reduces the friction-head materially, but probably not sufficiently, and in that event, the friction-head must be further reduced by increasing the size of the pipe.

Let us assume a 1½″ pipe—

The pressure-head is (Table 3) 84/10,000 feet;

The length of the pipe is 72 — 24, or 48 feet;

The friction-head is due to

1st, 48 feet of pipe	=	4 elbows
2d, 4 elbows	=	1 elbow
3d, 1 radiator valve	=	4 elbows
4th, 1 radiator	=	4 elbows
5th, 1 heater	=	—
Total	=	13 elbows

and may, therefore, be placed equal to that due to 48 feet of pipe with 13 elbows.

From the diagram (Plate 1) for 10,000 B. T. U. and a 1½″ pipe the velocity is about .11 feet per second and the friction-head is about 1/10,000 feet per foot of pipe.

From the elbow diagram (Plate 1) for a velocity of .11 feet per second and a 1½″ pipe, the friction-head due to one elbow is the same as that due to a 1½″ pipe 7/10 feet long.

The total friction-head is, therefore, $\frac{1}{10{,}000}$

$$(48 + 13 \times 7) = \frac{57}{10{,}000} \text{ feet.}$$

Since this is 27/10,000 feet, or 32% less than the pressure-head, a 1½″ pipe is slightly too large. Let us try a 1¼″ pipe; the unit friction-head is about 2¼/10,000 feet and the total friction-head 2¼ (48 + 13 × 6/10) = 126/10,000 feet.

Since this is 42/10,000 feet, or 50% more than the pressure-head, a 1¼″ pipe is too small.

As there is no standard pipe size between 1¼″ and 1½″ we must use 1½″ pipe and replace a sufficient length of it with 1¼″ or smaller pipe to increase the friction-head from 57/10,000 feet to 84/10,000 feet.

If 1¼″ pipe is used, the friction-head is increased (2¼/10,000 — 1/10,000) or 1¼/10,000 feet per foot of 1¼″ pipe used and, therefore, (84 — 57) ÷ 1¼, or 22 feet of 1¼″ pipe should be used to increase the friction-head to 84/10,000 feet.

If 1″ pipe is used, the friction-head is increased (7/10,000 — 1/10,000) or 6/10,000 feet per foot of 1″ pipe used and, therefore (84 — 57) ÷ 6, or 5 feet of 1″ pipe should be used to increase the friction head to 84/10,000 feet.

(To be continued.)

A Confiding Nature's Disappointment.

"Old friends are best," said the warm-hearted person. "Humph!" replied Mr. Sirius Barker, who was walking a little lame. "I suppose you're one of these people who would trust a last year's hammock rope."—Washington Star.

Learned It by Ear.

The dear little girl then arose, bowed, and recited it in this manner:

"Lettuce Denby up N. Dewing,
Widow Hartford N. E. Fate;
Still H. E. Ving, still per Sue Wing,
Learn to label Aunty Waite."

Then with the tumultous applause of the audience ringing in her ears, she sat down in happy confusion.—Chicago Tribune.

Sanitary Installation in the Covadonga Hospital at Havana, Cuba

By Joseph W. Cousin,

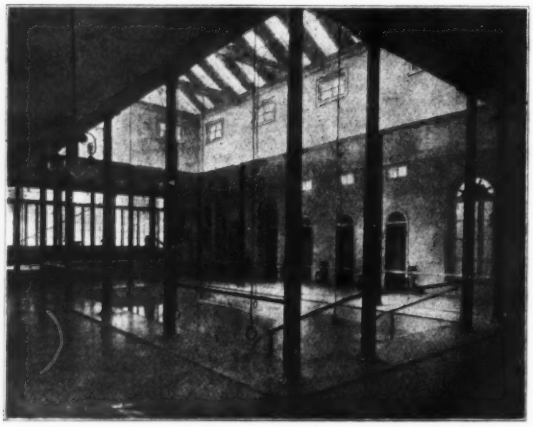
Sanitary Engineer, James B. Clow & Sons, Havana.

Bath Building.

The Hidroterapia Building, better known as the Medical Bath Building, at the Covadonga Hospital in Havana, Cuba, is a more complete combination installation than is to be found anywhere in the United States, not only for the class of baths and other equipment, but the whole building throughout, consisting of American encaustic wainscoted walls and floors, elegantly painted walls, electric fixtures and wood-work, all of which harmonize and make it a thing of beauty, as well as practical and sanitary.

The building is 75 feet wide and 110 feet long, the ceiling being 17 feet high, with a skylight in center 37 feet long and 16 feet wide.

All the different classes of baths and attachments are installed in rooms especially adapted for them, and are as follows: Hydrotherapeutic, massage,



The swimming pool and gymnasium in the bath building of the Covadonga Hospital at Havana, Cuba, looking from the main entrance and showing the different doors to the bath rooms.

Russian, Turkish, steam, hot cabinet, electric, chemical, hot and cold water bath, containing contagious disease, plunge bath, lavatory, toilet room and reception room and gymnasium. All rooms are situated so as to have entrance direct from the main salon, and are well ventilated, there being large swinging windows which open to the outside, giving air, and sunlight the whole day. It would be impracticable to describe in detail the system of the steam, water and drainage installation, as a great deal of time was spent on it to make it an up-to-date, practical and sanitary job; not by the system only but along with the first-class material and special fixtures which are installed and without a question of doubt, there is none better to be found anywhere.

The fixtures receive the steam and hot water from the boiler room, which is located in the Laundry building, 365 feet from Bath building, all pipes being run in a pipe duct to overcome condensation and rust, and easily reached for repair, as stated before. The steam is delivered to building and returned by gravity into the automatic receiving pump, and then delivered back to steam boiler. The hot water system is a complete circulation by gravity, and has a pressure of 40 lbs. to the square inch. Cold water is received from the 6,000 gallon steel tank situated on tower, which gives a pressure of 35 lbs. to all fixtures. All the supplies have controlling and by-pass valves from city pressure as well as tank pressure.

Ice Water System.

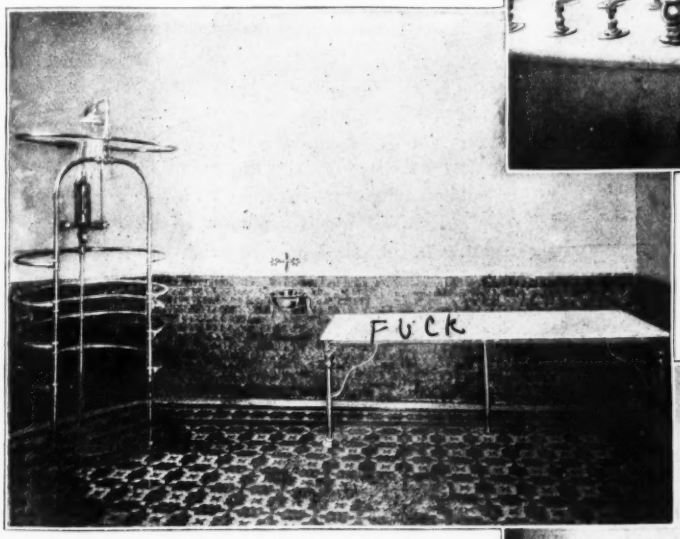
There is also installed an ice water system, for the baths and drinking fountains, which is a simple and new device of the contractors. It consists of an iron tank 42 inches square by 32 inches deep, sunk into the ground and covered by a 4 inch cover. Packed with wool in this tank there are three galvanized cylinders, resting on supports 6 inches from the bottom. The water from the street is connected to the end of one of the cylinders, and passes through the three; all cylinders being connected together. It is then delivered to the operating table and fountains. Over these cylinders there is a rack on which the ice is put, it being submerged in 8 inches of water. The ice cools the body of water in tank around the cylinders. There is an overflow pipe at level of water in tank, which carries off the surplus water. To start the cooling system you open a cock which allows enough water to fill the tank to overflow, and then put in the ice same resting on the rack over the cylinders. The water soon becomes cool and all water used for the bath and drinking fountains is direct from street and not melted ice water.

On entering the building you pass into the reception room or lobby, which is in size 15′ by 16′ 6″; the floor being laid with small colored encaustic tile, and wainscoted to the height of 40 inches with embossed dado and cap, with gold lines. Walls and ceiling are painted and decorated. On the right and left sides of the room there are two

large mirrors with nickle plated frames, resting on onyx tables, with nickle plated legs. To add to the beauty of the room is the large seven-light electric fixture of renaissance pattern.

LARGE SWIMMING POOL.

After passing through the room you enter into the main body of the building, where the large swimming pool and gymnasium are located; also all the entrances to the different bath rooms. The swimming pool is 36 feet long and 16 feet wide, by 6' 6" deep, all lined with American tile. The water to fill the pool passes through the mouths of two large brass lion heads, made especially for the Quinta. Around the pool and down the steps is a 2½" brass hand rail; over the pool is the large sky-light.



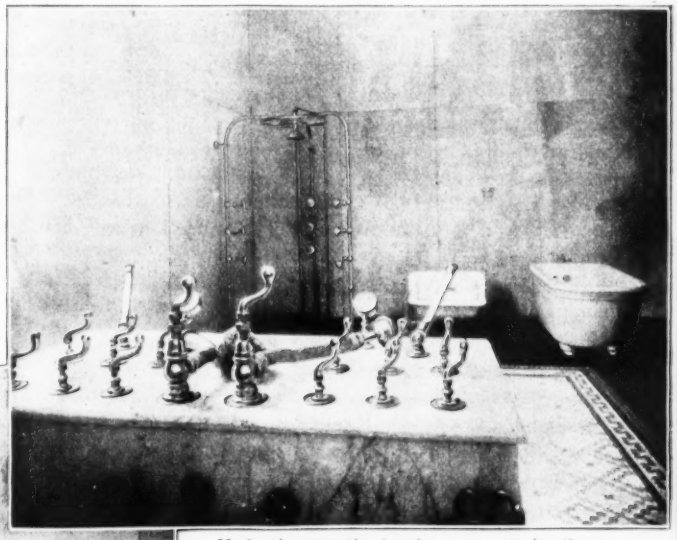
The massage room at the Covadonga Hospital, Havana, Cuba.

THE GYMNASIUM.

The gymnasium has a complete medical outfit and also two drinking fountains. The building is well lighted by 17 elegant electric fixtures. The floor is of marble and the walls wainscoted to the height of one meter with encaustic tile, having cap and sanitary base. The balance of the wall and ceiling being painted with dado and frieze.

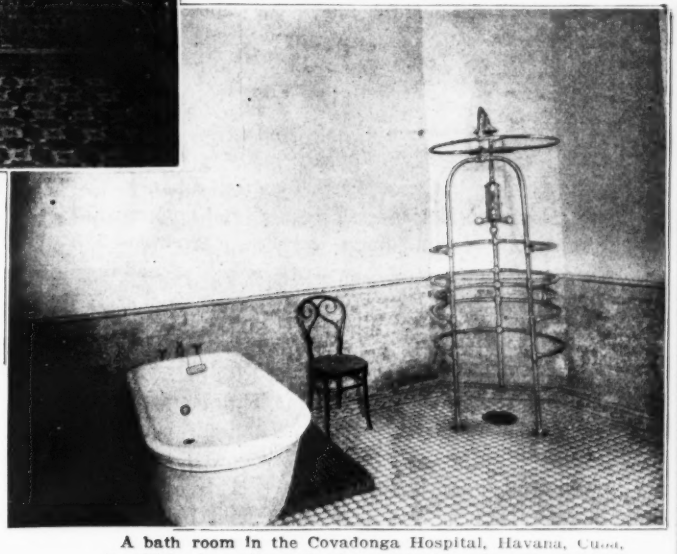
THE HYDROTHERAPEUTIC ROOM.

The Hydrotherapeutic room is 14x21 feet, the floor being laid with a small pattern on American encaustic tile, the walls lined to the height of eight feet with marble, secured to the wall by nickel plated screens and washers. The fixtures of this complete combination were made especially for the Quinta La Covadonga. They consist of a 6-foot



Hydrotherapeutic douche room at the Covadonga Hospital, Havana, Cuba.

roll rim solid porcelain bath tub, with all nickel plated connections; one high back roll rim sitz tub, with bidet, kidney spray,



A bath room in the Covadonga Hospital, Havana, Cuba, in which the patients having contagious diseases may be treated.

and supply to fill tub, all connections being of brass and nickel plated; one combination needle shower,

with bidet and shower head; one nickel plated tilting basin, and combination cock of hot and cold water; one marble massage table, setting on a nickel plated frame and legs. All the fixtures are controlled from one operating table, made of marble, the dimensions of which are 4′ 6″ by 2′ 6″, all fitted with brass nickel plated valves and trimmings. The physician or operator standing at the table, mixes the water to the desired temperature, shown by thermometers, adjusts the pressure, which is shown by a gauge, and operates the fixtures by means of the different valves on top and back of table. Each fixture and part of fixture has an independent valve and connection, so that any part can be put in use alone. The connections to the table are hot, cold and ice water and steam, and by this system any temperature can be obtained. Including vapor bath, there are two nozzles attached to top of table and are for giving direct jet of water or steam, or applying the spinal spray to patients standing several feet away. All water and steam is first received to the table and then distributed as the attendant may desire, after obtaining the proper temperature. All the floor under the fixtures slopes below the main floor, and is covered with wood slats, leaving the floor to drain to sewer by a 12-inch brass nickel plated patent bell trap.

Steam Cabinets.

Adjoining this room there are two steam cabinets, heated by steam coil and fitted with thermometer and glass panels. The patient sits on a stool with his head out through the top of the cabinet. It is also provided with live steam for vapor bath. The floor and walls in this room, like all other rooms which will be described, are laid in American encaustic tile.

Electric Bath Room.

The electric bath room has two roll rim 6-foot bath tubs, with hot and cold water, and connected by electricity, with direct galvanic current and electrodes complete. All switches being enclosed in a neat cabinet with glass front.

Chemical Bath Room.

In another room is the chemical bath or two roll rim porcelain baths of ivory white, with gold bands, and all brass nickel plated connection for hot and cold water. This room, like all others, has a patent floor drain as before described.

The contagious disease room has one porcelain bath tub as described in other rooms, and one brass nickel plated needle shower, with mixing chamber and thermometer, adjustable liver spray, head shower, with especially designed self-closing valve, rubber curtain, and patent floor drain, connected by hot and cold water.

Massage Room, Turkish Bath, Etc.

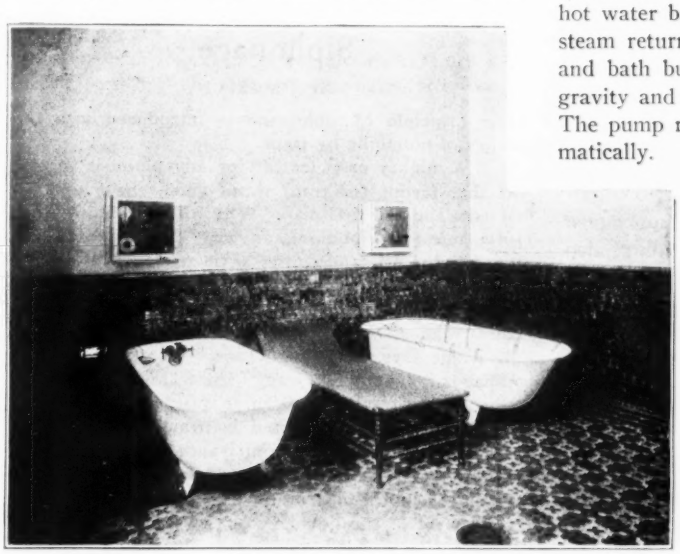
The massage room has needle shower, as in contagious disease room, marble massage table, with nickel plated frame and legs, rubber pillow, brass nickel plated tilting basin, with combination shampoo cocks, with rubber hose and hand hose. From this room you pass through a swinging door with glass panels to the hot room, or Turkish Bath. This room is 14x21 feet, with two large windows for light; the room is heated by two 17-loop radiators; fresh air enters the room through a ventilator; there is also a ventilator heated by steam with registers, which extends from the floor to the roof. By this system there is a circulation of pure air at all times. There are rattan couches and chairs for the patients to recline or sit on. From this room you pass through a swinging door with glass panels to the live steam or vapor room, better known as a Turkish bath; this room is 13x15 feet, the walls all being of marble; floors of tile of a small pattern and having floor drain. The steam is received by an improved jet; there is also an inclining slab with an air rubber cushion or pillow. In addition to this room there are six bath rooms, with solid porcelain baths, hot and cold water; also two lavatory rooms fitted with two solid porcelain wash basins, with nickel plated traps and connections, and one roll flushing rim porcelain slop sink in each room. The two toilet rooms are fitted with Oceanic siphon jet all porcelain closets, the latest to date, and all porcelain lip urinals with siphon cistern, nickel plated traps and connections. All of the side walls and partitions are of marble, having nickel plated top rails and legs and trimmings. Floors are of tile. All of the sanitary fixtures and devices are of the manufacture of James B. Clow & Sons, of Chicago and Havana, and they were installed under the personal direction of Dr. Manual Bango.

Boiler and Engine Room.

The boiler and engine room, which is in the Laundry building, is independent from all other rooms, having a concrete hollow block partition, which makes it fire-proof. The machinery is of the latest patterns, and the system of installation far exceeds any plant in Cuba, and second to none in the United States. It consists of a 40 H. P. Vertical Boiler, tested for 150 lbs. of steam, and is covered with asbestos blocks and wire mesh, and then plastered with asbestos cement and painted. The heat around the boiler is not noticeable.

The other machinery consists of a boiler feed

pump, house service pump, hot water heater and filter and a 12 H. P. horizontal engine. They have a capacity of 7,000 gals. per hour and are so connected that both can be used either to deliver water into the 6,000 gals. supply tank, or for the boiler feed. And in case of fire, cleaning of tank, or making repairs, they can pump direct into the four intermediate tanks situated on roof of bath building, or house system. They receive the water from a 500 gal. suction tank which is supplied by a 2-inch galvanized pipe, with automatic shut-off valve, taken from the Vento water supply. All the water used for the steam boiler is filtered and heated before delivery into the boiler, by passing it automatically through the heater and filter. The water supply for the heater and fire plug has two connections, one from the city pressure and the other from the tank, working automatically on the highest pressure; the tank pressure being 45 lbs.



The electric bath room in the Covadonga Hospital, Havana, Cuba.

All drips and drain cocks from pump and other machinery are received into a receiver and then discharged to sewer outside of building. By this system the floor is always in a dry condition. There is also a floor drain installed in an up-to-date sanitary manner for the purpose of draining the floor when cleaning boiler or room.

The main steam pipe and all branches are suspended from ceiling by improved hangers, and where they pass through walls they are sleeved. Each piece of machinery has an independent feed from the main steam line, and expansion swing joints at every turn. All steam pipes that pass under ground are encased in vitrified pipe, and can be replaced in case of breakage, without tearing up the floors or ground.

Below the boiler room there is a cellar which has an entrance from the outside of building. It is built of brick and ceiled with blue stone, supported on iron "I" beams; the walls and floors are cemented. It is drained to the sewer and ventilated by an 8-inch vitrified pipe. In this cellar there is an automatic receiving pump; a 400-gal. galvanized hot water boiler, and a 500-gal. suction tank. All steam returns from the laundry, disinfecting plant and bath building are received into this pump by gravity and then pumped back to the steam boiler. The pump requires no attention, as it works automatically.

The hot water boiler supplies water to the laundry plant, bath and all other buildings, and is heated by a steam serpentine coil, the steam being taken from the steam boiler by an independent 1½-inch pipe. The return from the coil is also received into the receiving pump. By this system of receiving all returns into the receiving pump, there is not a particle of condensation of steam or water lost. The two service pumps and engine in boiler room exhaust direct into the filter and water heater, and by this method it heats and filters all water before it enters the boiler. This system is not only a saving of fuel, but a greater saving of the boiler, as it extracts all the lime, iron and magnesia from the water before entering the steam boiler. The heater should be cleaned about once a week by removing a plate for the purpose. The time required to clean it is about one hour, and can be done by anyone of ordinary intelligence.

The hot water boiler for house service receives its supply from the street and 6,000-gal. tank, working automatically on the highest pressure. By this system the boiler and building always have a hot water supply, and cannot be damaged through any oversight or neglect, in not having water in the service tank.

All water, steam and return pipes pass through the cellar and are located on the wall, with independent controlling valves to each of the several different services.

The suction tank is connected to the street pressure by a 2-inch galvanized pipe and is kept full by

an automatic valve. The house service pump obtains its water from this tank, and then delivers it to the 6,000-gal. supply tank.

Disinfecting Tank.

The disinfecting and steam chamber is in an isolated room, adjoining the boiler room, and receives its supply from the steam boiler, with returns flowing by gravity to the receiving pump.

House Service Tank.

The house service tank is made of 3/16" steel and of 6,000 gallons capacity. It is 10 feet in diameter and 12 feet high, with steel cover, and erected on a galvanized steel tower 72 feet high, the columns resting on cement bases, of 4 by 4 feet. The tank is also provided with a steel ladder and lightning rod. It receives the water by means of a 2" galvanized pipe, furnished by the pumps situated in boiler room, which have a capacity of 7,000 gallons per hour. From the tank is a 2" supply pipe which supplies water to the laundry building, also the bath and all detached buildings, and the four intermediate tanks on the bath building, which have a capacity of 2,000 gallons. The system is so arranged that the intermediate tanks can be pumped into direct. The tank has also an overflow and indicator, showing the amount of water in it at all times.

Laundry Plant.

The steam laundry plant is of the latest pattern and the most complete outfit installed anywhere in the United States and none equal to it in Cuba. To add to its great features is the modern, roomy, well-lighted and well ventilated building in which it is installed.

The three iron enameled wash trays are of the large size and best enameled, with backs, nickel plated Fuller cocks for hot and cold water, and installed in an up-to-date and sanitary manner.

The cold water supply for all fixtures is taken from the house service tank, which gives a pressure of 45 lbs. There is also a direct street supply, which works automatically, and should tank water give out at any time, the plant will not be without water. Hot water is supplied from the hot water boiler in the pit, and has same connection as cold water. The pipes are of 1½" galvanized iron suspended from ceiling by improved hangers. All steam pipes are installed in like manner.

In this modern plant the comfort of the help has also secured its due attention—three large, well ventilated sleeping rooms, and a modern and up-to-date toilet room being provided. The toilet room has one iron enameled wash basin, with nickel plated cock and connection; one porcelain lip urinal with nickel plated trap and automatic flushing tank; one porcelain water closet with nickel plated flush pipe, oak cistern and oak seat; and one nickel plated head shower. All the fixtures are divided by slate partitions, brass top rails and legs, swinging doors of cedar, with locks. The walls are built of concrete blocks and painted with the best linseed oil and white lead, which corresponds with the building throughout.

We are indebted to Jas. B. Clow & Sons, Chicago, Ill., for the use of the illustrations used in this article.

Siphonage

By Phoenix

The principle of siphonage is introduced into the practice of plumbing by traps.

It is a mighty easy matter for any plumber to say, "Oh that layout (or trap) is no good, she'll siphon." Just turn and ask that man, "Why will it siphon? What do you mean by siphoning, anyway?" Now watch him get red in the face and stutter as he attempts to explain.

Somewhere he has read or heard the term siphonage and needs must use his hazy ideas in condemning some fixture that may not appeal to his fancy. "She'll siphon," he says, that ends it.

What is a syphon, anyway? The following definition has stood the test of some three quarters of a century and will answer now, quoted in nearly its exact language: "The siphon is a contrivance by the means of which a liquid may be conducted from one vessel to another through a pipe or tube which raises above the natural level of the liquid."

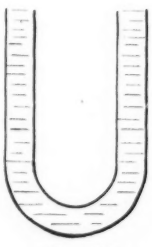


Fig. 38.

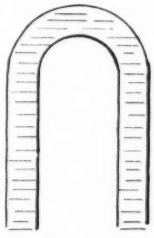


Fig. 39.

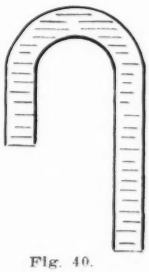


Fig. 40.

The principle of siphonage was made use of by the engineers of Ancient Rome many hundred years ago in constructing their immense waterworks systems. It has been found that "on the edge of the valley of the Garonne there is still to be seen the remains of a splendid bridge the thirteenth on the course of the aqueduct of Mount d'Or. Some of the lead pipes which were used for siphon to discharge into the reservoirs are still to be found.

"They are made of thick sheet lead rolled around so as to form a tube with the edges of the sheet turned upward and applied to one another in such a manner as to leave a small space which was probably filled with a kind of cement. Some of these pipes found are from fifteen to twenty feet in length. It is sup-

posed that strong cords of hemp were wound around the pipes forming the siphons to prevent them from bursting from the extraordinary pressure of the water."

In form a siphon resembles somewhat the letter U and has one side or leg longer than it really ought to be. To perform some very interesting experiments take a piece of pipe and bend as shown in figure 38; then fill it with water. Turn this tube upside down as shown in figure 39. A few drops of water may run out, but not very much, **because the sides, or legs of this tube are of the same length and contain an equal weight of water pulling downward from the top with the same relative force.**

Now change the length of the sides of the pipe or tube and make it resemble the one shown in figure 40. It will be seen that one side is somewhat shorter than the other.

Perform the same experiment as done previously with figure 39 and it will be found that this particular tube **will not** hold the water as did the former tube, **because one side or leg is longer than the other** and consequently the water runs out.

Should this tube of unequal sides full of water be thrust into a vessel of water as shown in figure 37, the water would at once start running, and pull the contents in the vessel **over the hill at O, until the water in the shorter leg falls a little below the end S, letting in the air and breaking the action of the siphon. This same effect of breaking the siphon will**

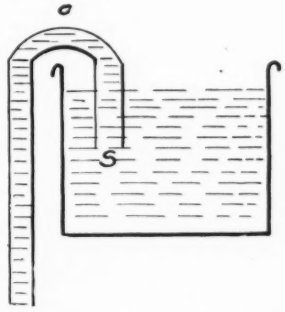


Fig. 37. Showing siphon in position, and point O, where the air may be admitted.

occur if a hole be punched in the top of the pipe at point O. Now this is an important fact and has a direct bearing on the installation of modern **plumbing.** Let us investigate a little and see **where** the action of a siphon applies to a trap.

In figure 41 the tub is partly full of water which may be discharged by pulling out the plug. Then the trap and waste pipe become filled with a solid stream of descending water, and, **over the hill is pulled the whole quantity by the action of the siphon,** and **"she's siphoned."**

This action of entirely removing the water from the traps by siphonage can be prevented by venting the crown of the trap at the point marked D. This would have the same effect as the hole punched in the top of the siphon at O in figure 37, effecting an inrush of air which would break the pull of the siphon thereby dropping enough of the water back into the trap to form a seal and prevent the entrance of odors into the house.

These facts are not clearly understood by householders generally and there may be also a few plumbers, here and there who could absorb a little wisdom along this line.

When several fixtures are connected to a vertical line of pipe the danger of siphoning the traps becomes greater **unless proper care be taken.**

The lower fixtures are in danger of having the seals broken from the operation of those above.

The water in the discharge pipe coming down in a heavy column tends to leave a partial vacuum which,

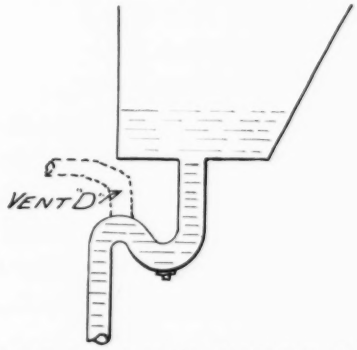


Fig. 41. Laundry tub, partly full of water, showing how siphonage may be prevented by using a vent.

if not guarded against will siphon the traps thus permitting the sewer gas to enter the house. From time to time various experiments have been tried with many different kinds of traps seeking to obtain a trap which would not siphon, without going to the expense and trouble of crown venting as practiced by the plumbing fraternity of the trade today. Generally speaking these experiments have not been a bright and shining success, although many claims to the contrary have been made from time to time, and in order to be perfectly safe it is better to stick to what is known to be perfectly trustworthy, if installed under a careful and reliable contractor, than to listen to the tale of one who "has something **just as good** and far **cheaper.**"

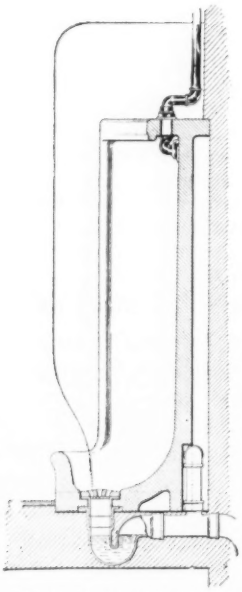
Factory Sanitation

David Bloomfield, Architect, Meriden, Conn.

Factory Urinals.

If the owner of the proposed factory building desires to install urinals of the type that extends to the floor and is anxious to prevent dirt from working into and clogging the waste, I would recommend the Sanito No. 2, Plate 6529-A in the catalogue of the J. L. Mott Iron Works, a sectional view of which is shown herewith. Nothing but solid urinal fixtures should be installed, and plate 6527-A from Mott's cata-

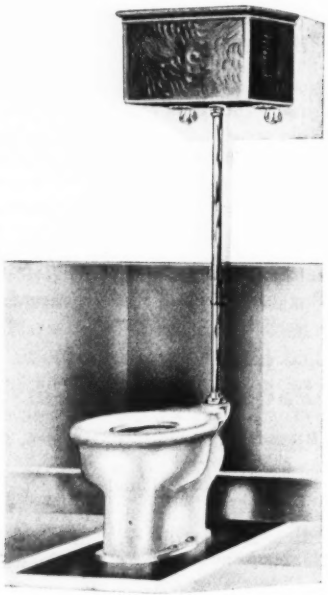
logue is also a fixture which I can recommend as serviceable and sanitary.



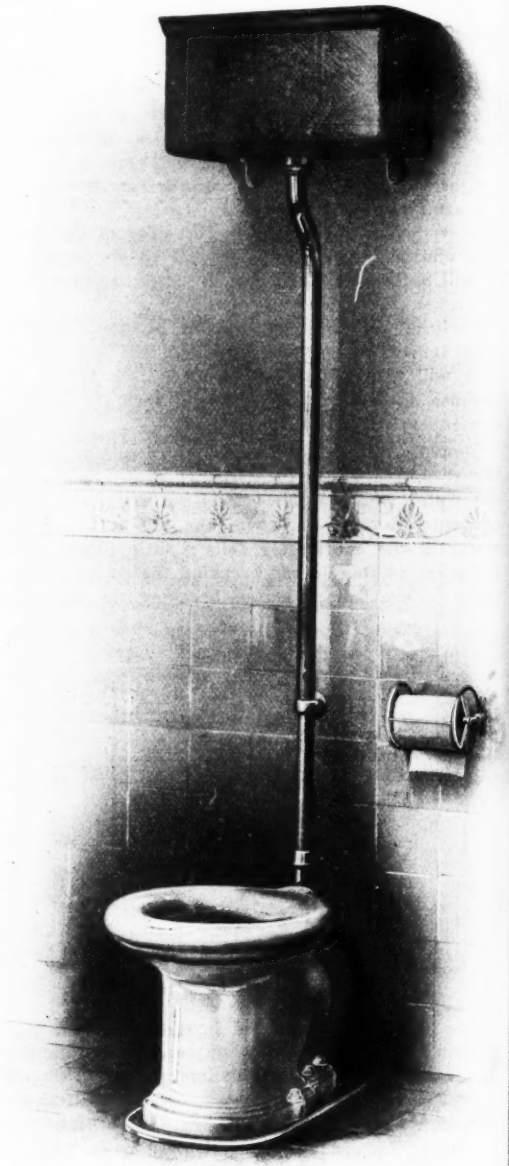
Sectional view of urinal recommended for factory use by Architect David Bloomfield, of Meriden, Conn. This is Sanito No. 2, plate 6529-A, from the catalogue of the J. L. Mott Iron Works.

Factory Lavatories.

Regarding lavatories I fully agree with Plumbing Inspector F. W. Tower, of Springfield, Mass., in recommending the Sanitary Wash Bowl of the individual supply type, plate 106 in the catalogue of the Manufacturing Equipment and Engineering Company, illustrated on page 16 of "Domestic Engineering," July 3, 1909.



Another type water closet recommended for factory use by Architect David Bloomfield, of Meriden, Conn. This is plate 97-D from the catalogue of the John Douglas Company.



Type of water closet recommended for foundry use by Architect David Bloomfield, of Meriden, Conn. It is plate 5072-A in the catalogue of the J. L. Mott Iron Works.

Water Closets for Factory Use.

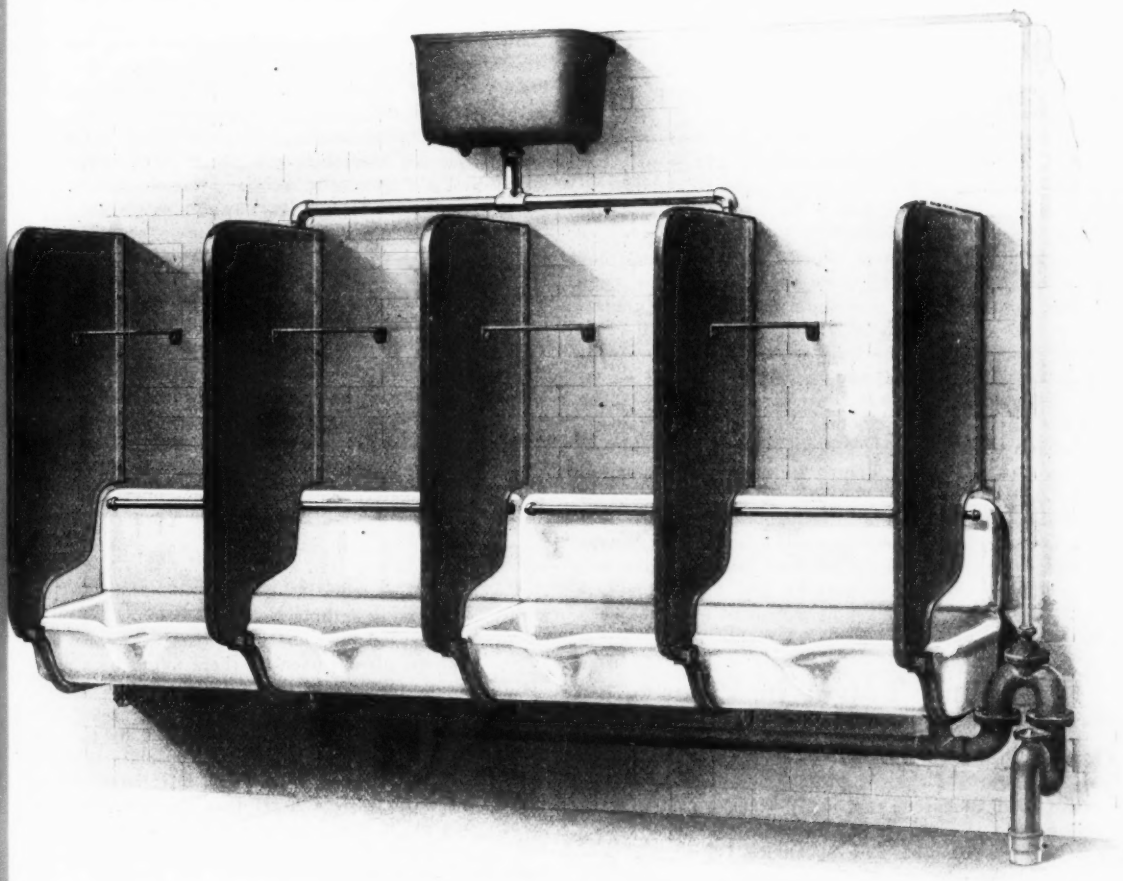
For water closet installations in factories and foundries I would recommend J. L. Mott's Plate 5072-A with automatic tank integral seat and slate partitions, as shown herewith, or a 97-D of John Douglas Co.'s

manufacture, fitted with automatic tank in the foundry section, and with the regular tank with pull and chain in other sections of the factory. The floor should be asphalt and provided with drain and the walls should be treated with a brick and cement coating. To remove odors a sheet metal pipe with suction fan should be installed.

A room finished in this manner could be washed down every day and kept in absolutely sanitary condition.

portance than style of fixtures, is keeping equipment and surroundings in sanitary condition. This can be accomplished only by having an employe, one doing laborer's work, give daily attention to sinks, bowls and closets.

It is a mistake for the employer to overlook the question of absolute cleanliness. A copper pail thoroughly scoured and filled with clean water of proper temperature is preferable to an individual enameled iron lavatory coated with dirt from previous use. What-



Another type of urinals recommended for factory use by Architect David Bloomfield, of Meriden, Conn. This is plate 6527-A from the catalogue of the J. L. Mott Iron Works.

Reuben S. Bemis, Plumbing Inspector, Providence, R. I.

Concerning the question of plumbing fixtures suitable for a foundry, in which valves, pipes and fittings are to be manufactured, I would say that the parties desiring information will obtain more aid from a general discussion of the subject than from details of equipment.

Only first-class plumbing fixtures should be selected. The best are necessary to encourage employes to be clean and self-respecting. But, what is of greater importance than style of fixtures, is keeping equipment and surroundings in sanitary condition. This can be accomplished only by having an employe, one doing laborer's work, give daily attention to sinks, bowls and closets.

It is a mistake for the employer to overlook the question of absolute cleanliness. A copper pail thoroughly scoured and filled with clean water of proper temperature is preferable to an individual enameled iron lavatory coated with dirt from previous use. Whatever the facilities for washing may be, they should be kept scrupulously clean, for soiled sinks or basins do not encourage habits of cleanliness. I therefore again emphasize the necessity of unremitting attention to this point.

Factory Water Closets.

As to water closets, the individual syphon-jet type should be selected, and the supply of toilet paper should be unlimited. All that has been said in regard

to cleanliness of sinks and basins is equally applicable to closets and surroundings.

It should be remembered that sanitary conveniences cannot be kept clean without constant effort, and the employe whose duty it is to look after them should be held to strict account by the foreman.

In the best hotels porters are employed day and night around the toilet rooms, and it is a mistake to assume that foundries and shops should not be given the same attentions; in fact more vigilance is necessary, because in hotels the best classes of people use the plumbing and the porters do not have to contend with oil and grime.

In the foundry proper there should be shower baths, urinals and closets, and these fixtures should all be under regular supervision. Cleanliness here is all-important.

Sunlight and fresh air should be admitted to toilet rooms, and the walls and partitions should be of water proof material for reasons too obvious to require explanation. Good ventilation is as essential as frequent cleaning of fixtures, walls and floors.

Lack of appreciation of fixtures and cleanliness may be noted on the part of some workmen, but the probability is that sanitary procedure will meet with general favor and a few weeks of proper discipline will bring about unanimity of opinion as to the value of the methods recommended, and the employers will be rewarded by knowing that their endeavors to establish higher standards of manhood have not been in vain.

I have consulted Mr. Willard T. Hatch, plant and power engineer of the Brown and Sharpe Manufacturing Co., whose plant represents the best in mechanics, and shop and foundry arrangements. Mr. Hatch has had twenty years' experience in the Brown and Sharpe works, which cover many acres of land and give employment to about 4,000 persons, and I take pleasure in stating that I have his indorsement of what has been briefly outlined here.

Sound Travel in Pipes

The query of our correspondent as to the cause of a hissing noise heard all over the house caused by opening a faucet anywhere on the plumbing system has called forth numerous replies, of which we publish the following:

Geo. M. Tait, Sycamore, Ill.

In reply to the query of your correspondent I would state that our data on the subject is very meager, it might prove a perplexing problem to solve. Briefly stated the annoyance may result from any or all of the following named causes:

1. Corporation stop at main too small or choked with sediment.

2. Service pipe being only ¾ in. and ends not reamed out, each successive end tends to telephone the noise ahead.

3. Air chamber (if any) becoming water logged, and in such case each stroke of the pumps could be heard distinctly.

4. Loose washers in fixture faucets, water meter, etc., or loose screws or discs.

5. Telephone ground wire soldered to water pipe. A practice followed by some telephone exchanges as it is cheaper for them to "ground" the wire on the water or gas service than to put in a ground rod. If an electric street railway runs parallel with the water main the rail leakage must go somewhere, and that is generally the line of least resistance: i. e., the water or gas service.

The prevention of such noises ought not to be a hard matter. If, as in the case of the telephone-street railway proposition, two ⅝ or ¾ in. stops are used in the main and a 1½ or 2 in. pipe are laid in a wooden box and filled with hot asphaltum or tar, this trouble will disappear entirely.

All piping should be carefully reamed out and no size smaller than ¾ in. used, except for lavatory branches. All fittings should be reduced only where fixtures branch into them.

If after bringing service through the wall the pressure should be excessive a reducing valve should be used set at such pressure as to deliver the water at a moderate pressure on top floor.

The most successful method, but not the cheapest, is to install a tank in the highest part of the building, supplied direct from the street main and controlled by a ball cock, no other fixture being supplied from this line. A separate line from this tank supplies all the fixtures in the building and if of size proportionate to the amount of water used, will give excellent satisfaction. We are troubled with a slight noise in our work here, but that fault lies with the water company as the pumps have more than they can do and run at a slower rate of piston stroke.

Charles S. Webster, Instructor of Plumbing, Technical High School, Buffalo, New York.

In regard to the singing noise in water pipe I will say that you do not state if noise is of recent date or if it was the same from the time the plumbing was installed. If it is something that has occurred recently, it might be caused by some loose part in a faucet or valve. If it has always been so, there might be a number of causes. So far as the soil pipe is concerned I think that the noise is only caused by the water falling down the pipe and could be remedied by packing the pipe in sand or mineral wool. You state that the water pipe is ¾ in. iron, and I would infer from that to supply the fixtures of a hotel that the pressure was great. A pipe of small bore, especially if a long run with a great pressure, is likely to be noisy, and the noise is likely to be heard all over the building if the pipe is fastened securely to the partitions or joist in any part of it. If your correspondent will increase the size of the pipe, thus reducing the velocity of the water, and if the pipe runs through a cellar, suspend it from the joists with hangers or chain, and where it runs up in the partition, secure it without having the pipe against the plaster or partition, he will not have any further trouble with the noise, unless, as I said before, there are some loose parts in the closet valves or faucets that need repairing.

C. R. Schmidt, Vice President Central Foundry Co., Baltimore.

Your correspondent does not give the pressure of the supply, which is the cause of the trouble; the area of the supply pipe being too small for the outlets.

hence the friction noise in the pipe.

Some of the so-called noiseless ball cocks have 5/8 in. water way openings which will transfer the noise in the water closet tank to the supply pipe—the combined area of two of these 5/8 in. outlets being greater than the area of the 3/4 in. supply pipe, hence the friction noise in the supply pipe. A reliable pressure regulating valve inserted into the 3/4 in. supply line in the cellar, with a piece of larger pipe on each side of the regulating valve, and the valve properly adjusted to a low pressure, will stop the noise in the old house.

For the new addition the large supply pipe recommended is good.

Questions and Answers

This Department is maintained for the use of every reader of "Domestic Engineering." We solicit problems from you and will give them our best attention. In stating your questions please give all of the facts as clearly as possible and when necessary accompany your question with a correct layout of the job.

HEATING BATH ROOM FROM RANGE BOILER.

168. Grove City, Minn.—To the Editor of "Domestic Engineering." Sir: I enclose a rough pencil sketch of lay-out of piping from a range boiler in connection with a heating coil in a bath room upstairs. I shall be much pleased to have your opinion on this job, and shall be glad if you can give me any advice so as to make it better. I should like to know if it will heat better if **top pipe from the water back was connected to the top of boiler on pipe marked X.** Also, will it be necessary to have more than one valve to shut off circulation through coil when heat is not wanted? Also, do you think there will be any chance of getting hot water out of the cold water faucet in laundry trays in basement if much water should be drawn? Can a circulating pipe be put in to work successfully between the boiler and hot water faucet for the sink by removing the pipe up to cold water pipe in bath room on dotted line with some kind of a check valve to prevent getting cold water direct from supply tank? If not, give me your idea how a circulating pipe could be put in for sink so as to get hot water without tapping out all the cold that is between boiler and faucet. The bath room to be heated is about 6x8 feet with 8-foot ceiling, and I presume there will be no difficulty in heating it with about 15 or 20 feet of coil radiator.

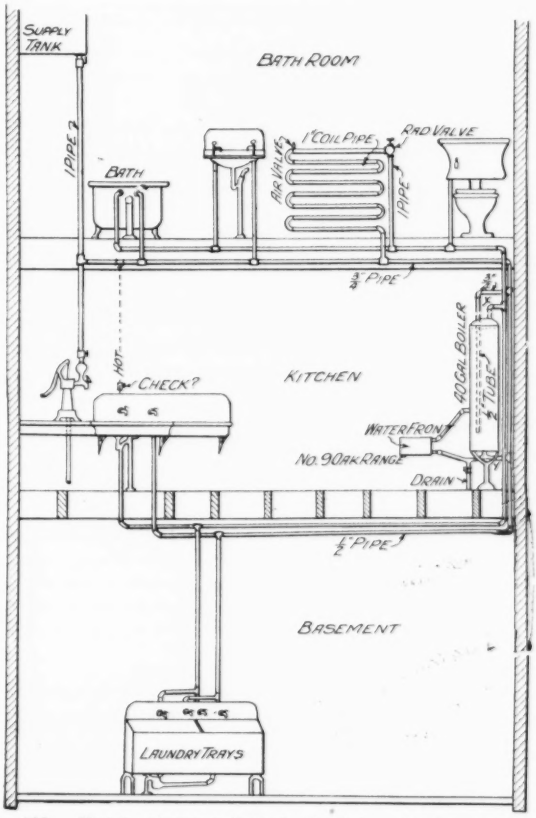
N. E. Hawkinson.

First: We do not believe you would better the job by connecting water back to top of boiler at X.

Second: We would prefer to use two valves on the heating coil and cut it out entirely when heat was not desired.

Third: We have marked in letter Y on bottom connection you have made on the boiler connection of cold water pipe. Why use this? We should think as shown that it would be very possible to draw hot water from the cold water faucet at laundry trays in basement.

Fourth: We would refer you to our issue of April 3, 1909, page 11, and also to May 8, 1909, page 169, in which there are some discussions relative to a circulation pipe. In general all check valves should be omitted. Regarding the use of circulating pipes: In such cases if a person could bring himself to think of the proposition as a **system** rather than **one pipe** and what it will or will not do, **much time and trouble would be avoided.** Regard this job of yours as a hot water job and do not expect to do things that you know a heating system would not do.



168. Sketch showing layout of piping from a range boiler to heat an upstairs bathroom, as installed by N. E. Hawkinson.

Put the line in on a complete circuit, and it should work satisfactorily. We have coming to this office **constantly** all sorts of inquiries and suggestions regarding circulating pipes under all conditions, and we believe that if any one will get the main idea **firmly fixed in their mind regarding the natural travel of water in any hot water system,** and that short cuts **are more than liable to result in short circuits** and a consequent resultant of portions of the job being **cold,** that much trouble, time and needless expense would be avoided.

Fifth: The amount of radiation you state you will supply should heat the bath room sufficiently.

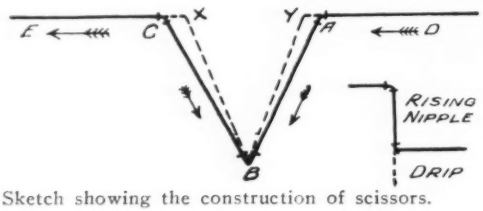
How to Construct the "Scissors."

Baltimore, Md.—To the Editor of "Domestic Engineering." Sir: I notice in reading your paper that in some of the articles reference is made to "scissors" which, as I remember, seemed to refer to the expansion

of mains, or the means of preventing it. Will you please inform and also illustrate?" **X. Y. Z.**

"The "scissors" is an arrangement for the purpose of taking up the expansion on a long line of heating mains.

In the sketch given the pipe A D represents that portion of the main from which it is desired to start one side of the scissors. The pipe C E represents the



Sketch showing the construction of scissors.

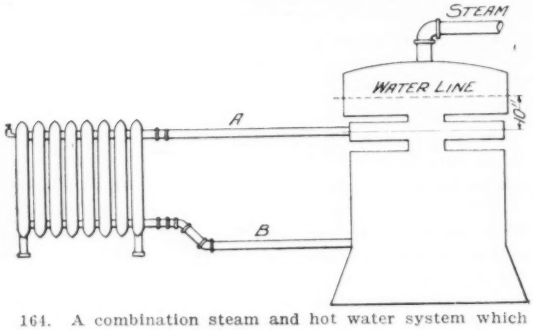
continuation of the main after leaving the second branch of the scissors. A B and C B represents the scissors proper, and the dotted lines X B and Y B show the position the scissors would assume when steam was passed through the main, the scissors closing up on the double joints A, B and C which are connected at these points by two ells and a nipple of the proper length required by the amount of height desired to be gained and the amount of height available.

The main D A in this case pitches down and at A, a drip should be taken to carry off the condensation. The sides A, B and C B should be from four to six feet in length, center to center.

This method of disposing of the expansion will also be found to serve another purpose on a long run of main, viz., that of gaining height above the water line. At the points A, B and C any desired raise can be gained that the space would permit, as the nipples can be made any desired length.

A HOT WATER RADIATOR ON A STEAM JOB.

164. Des Moines, Ia.—To the Editor of "Domestic Engineering." Sir: I expect to have a job to do in a short time where it will be necessary to heat one



164. A combination steam and hot water system which has worked successfully.

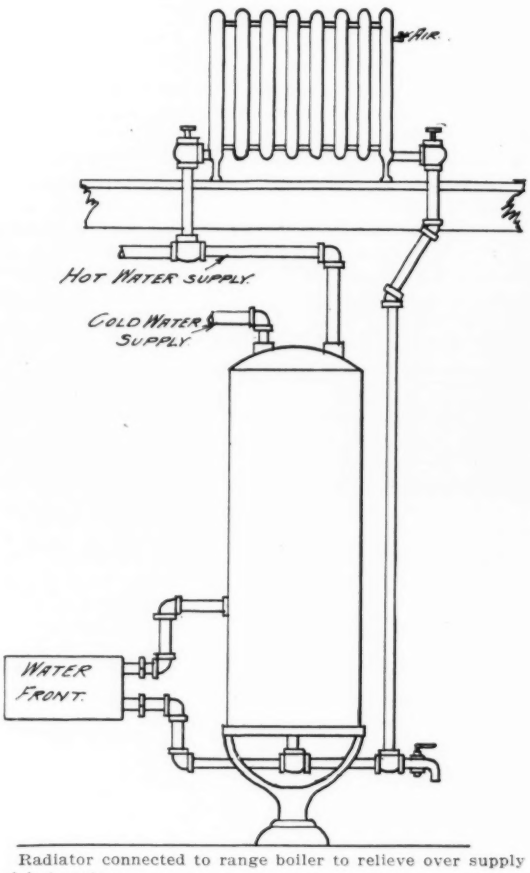
room located on the same level with the boiler. As my contract calls for a steam job and they will not allow any steam traps or pumps, I am rather at a standstill, and would be very much obliged if you could suggest any means by which this room could be warmed successfully, and at not too much extra expense.

G. Z.

In the drawing given an illustration is given of a job the writer put in some few years ago, which worked very successfully, and as you do not say that there shall not be any hot water radiator in the basement room, we submit the plan, which you will find will work all right in your case if you care to use it. Any boiler will answer, where you can tap out for an inch or inch and a quarter pipe, at, say, from ten to twelve inches below the water line, and the supply to the radiator need not rise more than half an inch in ten feet. By sinking the boiler a few inches and using extra long legs on the radiator you can probably make the supply and return about as given in our illustration. The radiator as drawn heats well on hot water, while the rest of the job works satisfactorily on steam, at about one pound gauge pressure.

Radiator Supplied from a Range Boiler.

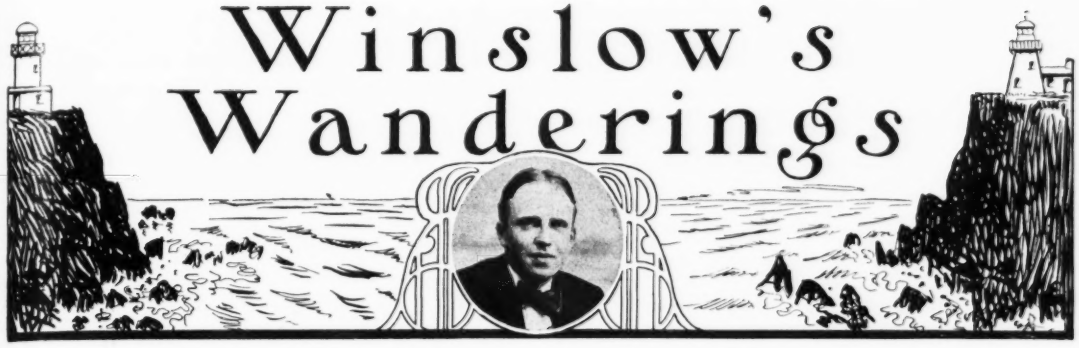
Bath, N. Y.—To the Editor of "Domestic Engineering." Sir: In regard to your cut published on page 138 in the issue of May 1, I will say that four years ago I put in a job just as you show it, and we have 85



Radiator connected to range boiler to relieve over supply of hot water.

pounds water pressure all the time, and sometimes 100 pounds. I put in a 120-gallon steel tank and heater to handle it and furnish hot water for four bath rooms, and the radiator to heat a room 16′ by 16′ and the job worked fine. **J. L. B.**

Winslow's Wanderings



A GLIMPSE OF HAVANA.

Havana, Cuba, June 15, 1909.—It was early morning when our staunch ship, the "Olivette," entered the harbor of Havana and the view that opened up before me was both novel and attractive. Within a hundred feet from the shore I could see the dark blue of the sea change to a hue of pale green, which made an effective foreground for the town with its houses

The wreck of the battleship Maine, whose rusted framework is a conspicuous object and the most interest-compelling thing in the harbor of Havana.—Photograph by our Mr. Winslow.

gaily painted in tints of pinks and yellows and browns, and blue and green, and white, and the dark red of the Spanish tiled roofs; beyond rose the green hills, and above was an intensely blue sky. It was all very bright and highly colored and charming. This is true whether one sees it in the tinted air of early morning or in the full blaze of the noon-day sun. It is but one of the many brilliant panoramas to be found in Cuba.

Our ship slowly passed by old **Morro Castle,** still standing majestically at the entrance to the harbor and over which could be plainly seen the Cuban flag waving in the early morning breeze. Beyond I could see the extensive fortifications of Cabaña crowning the heights opposite the city, while on the right I could distinguish the Malecón with its music stand, La Punta, the fort on the point, the yellow mass of the Carcel, and the Havana Tobacco Company's factory, which is the latest conspicuous feature added to the city's sky-line.

Entering the harbor in the olden days when the Spanish standard of red and gold waved above Morro and Cabaña, one could have seen long lines of soldiers in white uniforms on the parapets, and have heard the shrill of fife and roll of drum. But today no military display enlivens the scene; both forts have an air of desertion.

The "Olivette" did not dock, but as is customary came to her moorings at a buoy, within a stone's throw from the spot where the **United States battleship Maine** was blown up on that memorable night of February 15, 1898. **The wreck is still a conspicuous object in the harbor,** and the eye of an American turns to the rusted framework as the most interest-compelling thing in the Bay of Havana.

The trip from Port Tampa to Havana was made particularly enjoyable when, during the heated hours, the ship's band customarily got in its work. This picture was made by our Mr. Winslow, while on the high sea.

Going ashore in a tender we were all landed at Machina Wharf which was formerly property of the Spanish Navy, and on which our baggage received a very dilatory inspection from the custom house officials. Taking cab for the **Hotel Plaza,** under the direction of the courteous interpreter from that splen-

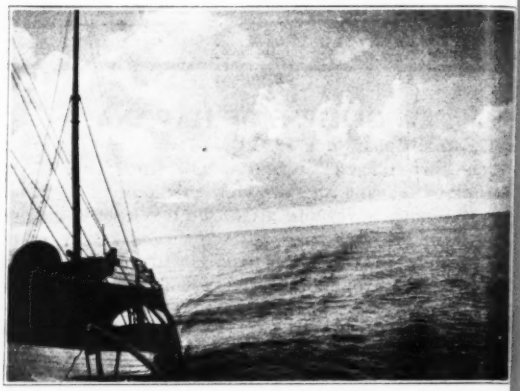
did hostelry, I straightway found myself in the narrow streets characteristic of that old part of the city, and amid surroundings where the unfamiliar style of the houses, the vehicles, the street life, the strange ways and the Spanish tongue proclaimed that I was in a foreign land.

Breakfast hour in Havana is from eleven to twelve o'clock (it is customary to eat but a light repast in the early morning, consisting mostly of coffee and rolls) and it was to **El Cosmopolita,** a famous old café on the Prado, that I went for my first tussle with Spanish food. My waiter understood not a word I said and to make my wants known I had to ask the assistance of an American who sat at an adjoining table. It would be difficult to surpass the cuisine in this old restaurant. Its chéf is an artist and the dishes he prepares for his guests would tempt the most staunch of vegetarians. I easily noticed that the Cuban is a particularly good friend to his stomach and that he indulges each day in an assort-

"I straightway found myself in the various streets characteristic of this old part of the city, and amid surroundings where the unfamiliar style of the houses, the vehicles, the street life, the strange ways and the Spanish tongue proclaimed that I was in a foreign land."

ment of richly prepared food that the most healthy American would find difficulty in consuming. The typical café in Havana is all open to the street and has tiled floor, marble wainscoting, marble-top tables, and marble floor, on which are displayed pineapples, guanabanas, green cocoanuts, and other fruits from which mild and cooling drinks are made. To sit at a table and drink harmless elixirs seems to constitute the larger part of the daily life of a people who are not too hurried and I found myself taking most kindly to this particular custom, and experimenting with such inviting beverages as I was able to make the waiter comprehend my desire for.

I had a splendid opportunity to see the business thoroughfares of Havana through the kindness of **Mr. Anderson,** manager of the Havana branch of James B. Clow & Sons, of Chicago. He called for me in



This interesting picture was made by our Mr. Winslow in the full blaze of the noon-day sun, as the good ship "Olivette" was nearing Key West.

his motor car and I accompanied him that sunny afternoon on his business missions about the city. I was greatly impressed with the shopping districts, particularly with **Calles Obispo and O'Reilly,** two of the old narrow streets through which vehicles are permitted to pass in one direction only. The impression of narrowness is intensified by the heavy cornices and overhanging balconies, and the signs which are suspended above spanning the street. In the sunny hours awnings are stretched across from roof to roof, completely covering the street and creating a subdued, yellow-toned light, which gives the streets, with their succession of open shops and their varied stocks of goods exposed to view, the air of an Eastern bazaar. The retail merchant on these thoroughfares reaps a big harvest in the tourist season, when the **"Americano,"** with his pockets filled with Spanish coins, becomes an easy prey to the attractive wares displayed before him.

I soon had my first opportunity to see **the Prado and the Malecón** at night, when these beautiful boulevards become a veritable concourse of smart equipages. These promenades are Havana's fashionable parade grounds and in the late afternoon and throughout the evening they are crowded with gorgeously gowned women, while from the windows and balconies of the houses people exchange greetings with their friends in the gay throng. At one end of the Prado, on the Malecón, is a music stand of classical design, with twenty Ionic columns supporting an entablature and dome, and inscribed with names of the great composers. Here and in Central Park band concerts are given in the evening and they prove

be one of the most enjoyable features of Havana. The thousands of park seats are occupied and the walks crowded with well dressed men and women. Electric light floods the place, the surrounding clubs and hotels, restaurants and Cafés are ablaze with illumination, and the scene is animated and brilliant. At the time of my visit the royal poincianas or flamboyant trees were in flower and they added great masses of bright crimson blooms, which glowed in the electric light with a richness of color intensified by contrast with the foliage of the royal palm and the deep blue of the sky; for the Havana heaven at night is blue, not black. In former times, I was informed, Spanish soldiers were everywhere, in the parks, on the promenades and drives, and at the evening concerts. They were present in force to do police duty, but the policeman is not now in evidence at Havana park concerts, nor does there appear to be any need of him. I could not help but notice the quiet, orderly and courteous bearing of the gathering, and to compare it not unfavorably with other night crowds I had seen in other cities.

This is a likeness of Cristino F. Cowan, one of the foremost sanitary engineers of Cuba. He is associated in Havana with the prominent contracting firm of Purdy & Henderson.—Photograph by our Mr. Winslow.

The **Prado,** which is an avenue consisting of a double promenade lined with seats, and a drive on each side—the carriage course being up one side and down the other in a continuous round—ends at the water's edge, and it is here at the **Malecón** where the famous shore drive of Havana begins. It is a broad concrete promenade and macadamized driveway and extends in sweeping curves to the west, encircling the water's edge throughout its course.

As I would sit in the early evening at one of the tables in front of **Hotel Miramar,** I could distinguish in the distance the verdant hills back of **Vedado** and the landscapes and marine vistas that would spread out before me were like painted pictures. Havana's water front is one of the noblest among the cities of the world. The colors of sea and sky and tinted houses, with the moss-grown forts and waving palms, create an effect which is striking at any time of the day, but sunset is the hour of enchantment. The **Malecón** at night is a veritable fairyland, when the long line of electric lights on the water front toward **Vedado** are reflected in quivering bars and bands of radiance from the water, when the lights of the electric cars are seen creeping along the distant heights and the lantern of the **Morro** glows and dims and glows again. To see the **Malecón** by moonlight, to mingle with the pleasure throngs, hear the music and feel the caress of the soft Gulf air, is one of the most enjoyable experiences of Havana.

This view of Havana was made by our Mr. Winslow from the fortress of Cabaña and one can clearly see from this elevation a good portion of the city, with its houses painted in tints of brilliant colors and the dark red of the Spanish tiled roofs. It is one of the many beautiful panoramas to be found in Cuba.

Note.—The writer desires to express his appreciation to the prominent publicity firm of Foster & Reynolds, from whose **"Standard Guide to Cuba"** he was able to procure much useful and valuable information in the preparation of this article. **E. DeForest Winslow**

"A Glimpse of Havana" will be concluded in next week's issue.

CORRECTION.

In our issue of July 3 we stated that W. A. Canby would continue as sales-manager of the Phoenix Pottery Company, of Bordentown, N. J. This was a typographical error, as the above name is W. A. Cauley.

WHOLESALE PLUMBING AND HEATING NEWS

The Cahill Iron Works, of Chattanooga, Tenn., Arrange For Additional Eastern Representation.

The Kenney Specialty Company Is Organized in New York City.

CAHILL IRON WORKS APPOINT EASTERN SALES AGENT.

The Cahill Iron Works, of Chattanooga, Tenn., have found it necessary, owing to a heavy increase in their Eastern business, to arrange for additional permanent representation in the East, for territory that can not be readily handled from the Company's Eastern branch in New York City. They have secured the services of Russell D. Knight, for several years with the Wm. S. Cooper Brass Works, of Philadelphia, and until recently associated with the supply firm of Walls, Owen & Stambach, also of that city. Mr. Knight is familiarly known to the trade in the East and in his new capacity will visit the cities of Philadelphia, Baltimore and Washington and surrounding vicinity.

WILL MANUFACTURE HIGH GRADE LINE OF PLUMBING FIXTURES.

The Kenney Specialty Company, of New York City, has been organized by A. E. Kenney and A. R. Vail for the manufacture of a new flushing valve and the sale of a high grade line of plumbing and kitchen fixtures including closets, lavatories, baths, etc. The new valve will be known as the "Flush-Voir" and has been developed as the embodiment of a dozen years' experience by the above named gentlemen in the manufacture of closet flushing devices. Both gentlemen are well-known in plumbing trade circles through their long connection with the Kenney Manufacturing Company of New York; Mr. Kenney, having served that company as president for the past five years, and Mr. Vail having been connected with both its sales and mechanical departments. They enter upon their new business venture with the well wishes of a host of friends.

DETROIT PLUMBING SUPPLY MEN WILL FIGHT FOR SUPREMACY ON DIAMOND.

Baseball enthusiasm runs high in Detroit plumbing supply circles and many battles for supremacy will be fought out on the diamond this summer between teams representing the different supply houses. The Walker team went down to defeat last Saturday at the hands of a crack nine made up from the two teams, which Murray W. Sales & Co. boost. Office and store both have their own team and the rivalry is intense, except when the boys are called upon to meet outsiders, when they bury the hatchet and make up a joint team with which they are not afraid to meet all comers.

WILL MANUFACTURE PLUMBING GOODS.

The Plumbers' Standard Supply Foundry is the name of a new company which has just filed articles of incorporation with the secretary of the State of Connecticut. The concern is to do business at Naugatuck and the incorporators are Samuel Chevalier, William Krodel, John McArdle, Marie L. Chevalier, William W. Chevalier and Arthur L. Wood, of Naugatuck, and Charles M. Webb, of Waterbury.

INCORPORATED TO MANUFACTURE DISPLAY STANDS FOR SHOW ROOM FIXTURES.

The B. Fanning Company, of Newark, N. Y., has been incorporated with a capital of $20,000 to manufactue display stands for plumbing fixtures. The incorporators are: B. F. Fanning, Newark; J. F. Susio and E. M. Strouss, of Rochester. These stands were displayed in the Exhibit hall at the annual convention of the National Association of Master Plumbers, held recently in Detroit, Mich.

HAS ENGAGED IN PLUMBING SUPPLY BUSINESS.

William Greenberg has engaged in the plumbing supply business in New York City and has leased suitable premises at 4056 Third avenue, in that city.

HAVE MOVED TO ENLARGED QUARTERS.

The United States Construction and Supply Company, of Boston, Mass., has leased an entire building, located at 38-39 India street, for a term of years and in the future these enlarged new quarters will be the home of its business.

NOW IN NEW SAN FRANCISCO HOME.

Joseph Thieben & Co., of San Francisco, Cal., representatives of the Pittsburg Water Heater Company, Pittsburg, Pa., have just moved to improved quarters at 663-671 Mission street, where they occupy an upper floor.

WILL MAKE PLUMBING SPECIALTIES.

The Utility Specialty Company of Trenton, N. J., has been incorporated with a capital of $50,000 to manufacture and deal in sanitary fitttings and plumbers' supplies. The incorporators are: E. L. Fine, R. N. Burkert and W. T. Burkert, all of Trenton.

WILL ERECT NEW GROUP OF BUILDINGS.

The Jacob A. Volrath Manufacturing Company, of Sheboygan, Wis., has arranged for the erection of a new group of buildings for the manufacture of its sanitary ware. These additional quarters will allow the company greatly increased facilities.

PLUMBING SUPPLY HOUSE DAMAGED BY FIRE.

The plumbing supply house of George H. Billo, at 82 John street, New York City, was damaged by fire last week. Insurance on the stock and fixtures of this concern was carried to the amount of $20,000.

STEEL AND IRON MARKET MORE ACTIVE

Pipe Foundries Report Orders Improving Steadily.

Copper Consumption Shows Healthy and Gradual Improvement.

IRON AND STEEL MARKET IMPROVING.

Chicago, Ill.—It can be said that one of the features of the past few days' business has been the advancing prices and heavy sales of Southern iron. From the Western section of the country reports are coming in of more business, while in the East the largest block of Bessemer handled recently has been taken up by the buyers from Pittsburg.

The "signs of the times" seem to indicate an improvement, slow, to be sure, as regards the whole country; but still an improvement.

From various quarters information is sought by buyers that were thought to have had their requirements already perfected.

One of the largest of the Southern furnaces has reported that they were flooded with inquiries, and that they had sold much iron; while the pipe foundries report increasing orders. It is also said by the makers of railroad equipments that their orders are increasing steadily.

THE COPPER MARKET.

According to some of the statements made certain Montana mines are shipping a larger quantity of copper ore than at any time in their business.

Whereas previously their output monthly was some 110,000 tons, it has gone to 140,000 tons; an increase of 30,000 tons per month.

LEAD MARKET DULL.

While the shipments have been somewhat heavier than for the week previous, the demand has been somewhat limited and the amounts offered have been sufficient to meet the situation. The producers seem to be sure of an advance, but not overly anxious to sell.

THE OLD METAL MARKET.

Chicago, Ill.—A general quietness prevails, some of the smaller concerns having given out a few orders, and different manufacturing concerns have asked bids upon their scrap accumulations.

Dealers' buying prices are as follows:

Clean heavy copper and wire	$12.00
Light copper	10.75
Heavy composition	11.00
Heavy yellow brass	8.50
Light brass	5.25
Yellow borings	7.50
Red borings	9.00
Heavy lead	4.00
Tea lead	3.50
Scrap zinc	4.00
Block tin pipe	24.00
Mixed pewter	18.00

New York, N. Y.—We quote dealers' buying prices as follows:

Heavy crucibled copper	$11.50 to	11.75
Heavy copper wire	11.25	11.50
Light copper	10.25	10.50
Uncrucibled hy. copper	11.25	11.50
No. 1 mach. composition	10.75	11.25
Plumbers' cocks and faucets	9.00	9.50
Heavy brass	8.00	8.25
Light brass	6.25	6.50
New brass scrap	8.50	8.75
No. 1 brass turnings	7.25	7.50
No. 1 comp. turnings	8.50	9.00
New aluminum cuttings	14.00	16.00
Old sheet aluminum scrap	12.00	12.50
Cast aluminum turnings	10.00	10.50
Clean aluminum turnings	4.00	5.00
Block tin pipe	26.00	27.00
No. 1 pewter	18.00	19.00
Solder joints	6.50	6.75
Heavy lead	4.00	4.10
Tea lead	3.75	3.80
Electrotype	4.00	4.20
Stereotype	4.12½	4.37½
Small foundry type	6.00	6.50
Zinc scrap	3.37½	3.62½
No. 1 slab zinc dross	3.12½	3.37½

New York Metal Market, July 6.

Copper, Prime, Lake	$13.40-13.50
Copper, Electrolytic	13.00-13.10
Antimony, Cookson's	8.37½
Lead	4.35
Straits Tin	29.12½
Spelter	5.45

Chicago Iron Market, July 8.

Southern, No. 2 Foundry	$15.85-16.35
Northern, No. 2 Foundry	16.50-17.00
Lake Superior Charcoal	19.50-20.00

July 8, 1909:

Foundry iron was same as week previous
50c less per ton than the year previous
Copper was ¼c less than the month previous
2-5 more than the year previous

Charlotte, N. C.—The T. C. Toomey Company has moved its plumbing and heating establishment from 217 South Tryon street to Third street.

Ft. Worth, Tex.—The J. H. Armstrong Company, of this city, has been incorporated with a capital stock of $40,000 by J. H. Armstrong and others, for general manufacturing purposes.

St. Louis, Mo.—Dixon-Smith Engineering Company has incorporated with a capital of $15,000 to conduct a general engineering business, including steam and hot water heating. The incorporators are: Wm. M. Dixon, Howard F. Smith and James L. Longino.

MASTER PLUMBERS ENJOY ANNUAL OUTINGS

Maine Association of Master Plumbers Holds Its First Annual Convention and Field Day.

San Francisco Master Plumbers Adjourn to Camp Taylor.

SANITARY PLUMBERS' ASSOCIATION HOLD ANNUAL OUTING.

Providence, R. I.—The members of the Sanitary Plumbers' Association and their families to the number of nearly 200 enjoyed an outing at Boyden Heights on June 29. The major part of the visitors made the trip by train, but others went by trolley or auto. Ball games and other sports were on the program and a general good time was enjoyed. The committee in charge consisted of E. P. Brennan, Joseph Appleton, Thomas E. Manning, Adrian Fuller, John F. Davis and Preston R. Walker.

DETROIT MASTER PLUMBERS SHOW INCREASED INTEREST IN ASSOCIATION WORK.

Detroit, Mich.—C. P. Tieze, secretary of the Detroit Master Plumbers' Association, is greatly encouraged by the renewal of zeal displayed by members as the result of the National Convention held here last month. Many of the members whose interest in the Association had become lukewarm have expressed their intention of helping along the good work in every way. The Detroit local needed such an awakening and the members, brought more closely together by the necessity for upholding the honor of Detroit as a convention city, were better prepared than ever before for taking to heart the lessons taught by a great national convention.

SAN FRANCISCO MASTER PLUMBERS ENJOY ANNUAL PICNIC.

San Francisco, Cal.—The annual picnic of the San Francisco Master Plumbers' Association was held at Camp Taylor, Marin County, on June 26 and the event is declared to have been the most successful of its kind ever held by the local organization. The day was perfect for an outing and almost all of the master plumbers, their families and friends made the trip. The Association is always very careful in regard to its selection of guests and the annual picnic is more in the nature of a family affair than anything else. The usual games and field events were indulged in and with feasting and dancing the day was enjoyably spent. The following well-known master plumbers comprised the committee on arrangements: H. Westphal, S. Petersen, M. Cohn, C. Mayer and A. Newmark.

MASTER PLUMBERS OF BERKELEY, CAL., GIVE ANNUAL DINNER.

Berkeley, Cal.—A very delightful evening was spent on the occasion of the annual dinner given by the Association of Master Plumbers of this city on the evening of June 28. The event took place in Oakland, where arrangements had been made for the provision of all. President A. M. Paulsen made a splendid toastmaster and his remarks were always interspersed with witty and appropriate words. Peter P. Sheehy, vice-president of the Association, and George Stoddard were among the speakers of the evening, the latter delivering a very interesting address on "Executive Work." Those who were present on this occasion were: W. J. Ahrens, C. W. Abbott, C. Sugvick, W. Scofield, Frank Kosters, W. W. Scott, Robert Anniss, W. L. Buckins, M. Lavit, C. Davis, George Stoddard, M. Hall, A. M. Paulsen, R. J. Nutting, August Johnson, Peter J. Sheehy, A. Bevins, B. T. Schillerts, D. T. Smith and W. H. Webb.

MAINE MASTER PLUMBERS HOLD FIRST ANNUAL CONVENTION AND FIELD DAY.

Gurnet, Maine.—The first annual convention and field day of the Master Plumbers' Association of Maine was held on Thursday, July 1. This organization has been in existence but a single year and already the members have shown by their enthusiasm that they can appreciate the splendid benefits to be derived from such association work. John B. Smith, of Lewiston, was the first president of the association and has served in that capacity for the past year. The "Assembling of the Clans" was arranged early on Thursday morning, and at New Meadows the Bull Rock and New Meadows steamers were in readiness to take their guests down the river. In all, one hundred and ten members were on hand.

Lewiston and Auburn furnished quite a select gathering, which party was chaperoned by Gene Goss and that was enough to know that something would be doing every minute. Gene is all right and even if he is a bit fervid in his oratory he knows how to get there with both feet and they are good sized ones. Here is the crowd that he had in charge: President and Mrs. John B. Smith, Mr. and Mrs. F. A. Chase, Mr. and Mrs. C. F. Dolliver, Mr. and Mrs. T. W. Kerrigan, Mr. and Mrs. Fred Keene, Eldredth Arnold, C. E. Morrill, C. G. English, J. H. Chase, Mrs. Charles Turgeon, Mrs. Eugene W. Goss and Frank Corey.

The Wigwam was reached at 9:30 a. m. and then T. W. Kerrigan, the flag-bearer, threw the master plumbers' banner to the breeze and Argenzio's Italian orchestra, from Boston, struck up an appropriate salute. It was a moment of triumph, for the salt earth was there.

After a little session of mutual congratulations the business meeting of the year was called to order by President Smith. David Calhoun, of Portland, vice-president; G. A. Leonard, Waterville, secretary and G. A. Anthoine, of Biddeford, treasurer, were all present. The executive committee was made up of John B. Smith, Lewiston; G. L. Leonard, J. A. Redland, Bath; J. H. Clogan, Augusta; Geo. E. Reed, Gardiner;

T. W. Kerrigan, Lewiston; Chas. E. Eaton, Brunswick; Arthur Shea, Rockland and E. W. Goss, Auburn.

The first business transacted was the election of officers. Mr. Hogan, of Augusta, in a graceful and eloquent manner, placed in nomination John B. Smith for president. This was eloquently seconded by Eugene Goss in a way that electrified the crowd and drew out tremendous applause. The election of Mr. Smith was made unanimous and thus another laurel was added to the crown of popularity worn by that Lewiston gentleman.

The reply of President Smith was very appropriate indeed. In accepting this second election he reviewed the history of the trade and showed that the public was misinformed regarding its big profits. He said that only one plumber in the state owned an automobile and he was an object of wonder and admiration. The plumbers wanted to give all a fair deal and with this association one object was to get a law for sanitary plumbing that would benefit the rich as well as the poor.

The other officers were then all re-elected in turn One or two changes were made in the executive committee which now stands as above given.

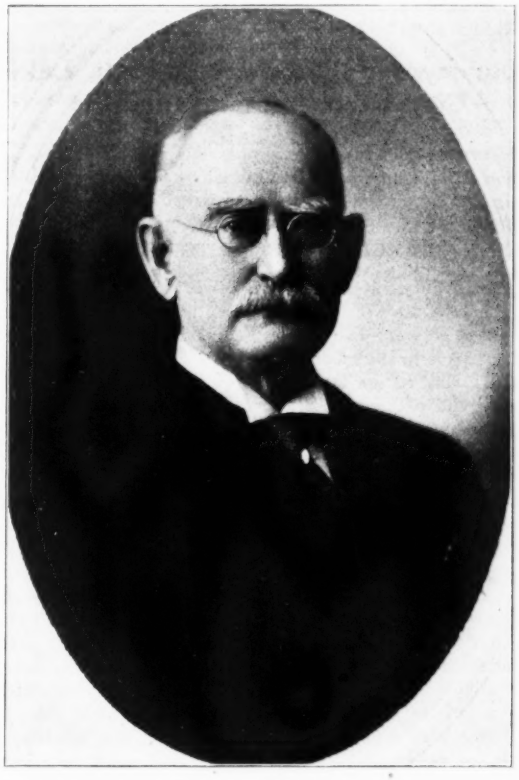
A vote of thanks was then passed to the officers for their work during the past year, and to the ladies for their presence at the meeting. This closed the business session and an adjournment was taken.

The next hour was passed in social enjoyment and a ball game in which a select assortment of supplymen participated, was not the least amusing feature of the occasion. Among these gentlemen present were the following:

J. E. Herrick, A. F. Sawyer, Wm. H. Page Boiler Co., Boston; J. H. Towle, J. J. Bennett, H. B. Smith Co., Westfield, Mass.; A. E. Campbell, W. H. Gallison Co., Boston; A. D. Saul, Waite Randlett & Co., Boston; S. R. Mitchell, Walworth Mfg. Co., Boston; Will C. Miller, W. B. Hubbard & Sons Co., Boston; A. R. Russell, C. F. Fischer, Dececo Co., Boston; J. H. Smith, A. M. Parker, Jas. H. Young Co., Boston; H. E. Secor, Pierce, Butler & Pierce Manufacturing Co., Boston; Geo. E. Stevens and John Stevens of Locke, Stevens & Co., Boston; J. M. Griffith, Fairbanks Co., Boston; C. H. Barker, J. H. Cunningham Co., Boston; R. J. Kirby, J. L. Mott Iron Works Co., Boston; A. D. Brackett, F. W. Webb Mfg. Co., Boston; E. F. Hayden, J. H. Douglas, Smith & Abbott Co., Boston; P. J. Lynch, John Douglas Co., Boston; W. F. Stearns, American Radiator Co., Boston; C. E. Morrill, Braman Dow & Co., Boston; W. F. Snow, Dalton, Ingersoll Mfg. Co., Boston; C. N. Fanbaun, Chadwick Boston Lead Co.; C. R. Nelson, Magee Furnace Co., Boston; L. D. Scales, Fitz, Dana & Co., Boston; Fred L. Avery, Austin Doten & Co., Boston; Byron E. Near, H. W. Johns Manville Co., Boston; Geo. W. Paul, Crane Co., Boston; E. P. Flanders, Brown, Wales Co., Boston.

Landlord Dimock of the Wigwam served a shore dinner of elaborate type. It was a gay banquet and enlivened with plenty of good music. The traveling men, who were especial guests of the day, organized a full choir of a dozen voices and everything from the Good Old Summer Time down to the Doxology was sung. The orchestra was fairly drowned out and gave way to the vocal. Among them were splendid voices and all save the umpire of the ball game joined in the grand chorus. That official was nursing a sore toe and repairing his disposition. No more jolly party ever assembled at the Wigwam, or for that matter in all Maine. Whoever thinks this will not be an annual event hereafter will go wide of the mark. The ladies entered heartily into the spirit of the occasion and now and then a sweet soprano voice mingled its notes with the heavier strains of the men. Steamed clams, broiled lobster and Auld Lang Syne make a happy combination and these were all mingled in proper proportions.

H. H. Gove.



John B. Smith of Lewistown, Maine, re-elected president of the Maine Association of Master Plumbers.

J. W. Kennely, a prominent master plumber of Springfield, Mass. and one who has always taken a deep interest in all Association business, sailed from New York last Saturday on the Caronia for a three month's trip abroad. He was accompanied by his daughter, Miss Anna Mae Kennely. It is their intention to spend much of their time on the British Isles. W. J. Kennely, Jr., will care for the interests of the business of W. J. Kennely & Son, during his father's absence.

THE WAGE QUESTION AMONG THE CRAFT

Over Supply of Labor in San Francisco may cause Reduction in Wages

Journeymen Plumbers at Salt Lake City, Utah, Demand Increase in Scale

PROPOSED REDUCTION IN WAGE SCALE IN SAN FRANCISCO ATTRACTS ATTENTION.

San Francisco, Cal.—While conditions in the plumbing line at the present time are in a much better shape than they were last winter, there are several of the large firms in the business that are working on but part time owing to the fact that large jobs are well cleaned up at the present time and smaller concerns are able to secure most of the work in the small class "C" buildings that now seem to be under construction. At the present time there are no really large structures in course of construction and no very large ones are being planned for the immediate future. The result will probably be that fewer plumbing firms will attempt to do business on the large scale that has been so marked since the fire. These large plants were fitted up for the enormous amount of work that presented itself in such a short time and it is stated that the facilities of these shops combined could take care of double the amount of work that might be expected in a city of the population of San Francisco. Many of the men who came here following the fire have left for other fields, but there are still more than can be kept employed steadily and the presence of the over-supply is quite a problem. One of the most noticeable effects of this over supply of labor in this line is the cutting of wages and the fact that this practice is carried on by some employers is well known. This results in low figuring on contracts and the master plumber who attempts to follow out his agreement with the journeymens' organization strictly to the letter is working at a decided disadvantage. The wage proposition here is attracting considerable attention at the present time, but the journeymen are resisting all efforts to have the scale reduced to the figures prevalent at the time of the fire, as is proposed.

JOURNEYMEN PLUMBERS OF SALT LAKE CITY, UTAH, DECLARE STRIKE.

Salt Lake City, Utah.—The journeymen plumbers of this city, who are members of local union, No. 19, declared a strike in all of the shops that belong to the association of master plumbers last week, demanding an increase in wages from $5.20 per day to $6.00 per day, for eight hours' work. The masters claim that the men acted unfairly in the matter, inasmuch as no warning was given to them as to the intended demand. At the present time there is a great deal of new building in progress in Salt Lake City and the decision of the journeymen to go out at this time comes at a very inopportune moment. There is quite a good deal of non-union labor, however, working towards this city and it is barely possible that these imported men may solve the problem now existing.

AMERICAN FEDERATION OF LABOR MAKES IMPORTANT DECISION.

Washington, D. C.—The right to organize a local union in any locality, where either organization already has a local union, was denied to both the International Association of Steamfitters and the United Association of Plumbers, Gas and Steamfitters at a meeting of the Executive Council of the building trades' section of the American Federation of Labor, on July 1.

OBITUARY

PROMINENT MASTER PLUMBER OF JERSEY CITY PASES ON.

John Callary, a well-known master plumber of Jersey City, N. J., and for several years, chief plumbing inspector of that city passed on at his home on First street on June 15. Mr. Callary had been ailing for some time and was confined to his home for three months before his demise. He was fifty-eight years of age and was connected with the plumbing business for about forty years. He succeeded in business the old established Savage firm with whom he learned the trade. Everyone who knew him, remarked his tenderheartedness. He gave freely, detested notoriety and lead a very reserved life. The trade and indeed his entire native city, has lost a good friend and worker. Being a member of the Master Plumbers' Association, he was always at the forefront of anything that meant for the betterment of the trade and up until the time of his death was president of the Third Ward Republican League of Jersey City. His widow alone survives him. F. R. Brick, formerly manager for Mr. Callary's establishment on Jersey avenue, succeeds him in business.

CONTRACTS AWARDED

Duluth, Minn.—The Duluth Heating Company has been awarded the heating contract, $1,450, for the Polish Catholic church here.

Manistique, Mich.—Barton Bros. received the contract, $2,870, for the heating and plumbing in the Riverside school building in this city.

Springfield, Mo.—J. W. Schneider & Sons have secured a contract for the plumbing and heating installation in the Weaver school here.

Indianapolis, Ind.—Kirkhoff Bros. & Company of this city have been awarded the contract, $25,300 for heating the new city hall by steam.

Cheyenne, Wyo.—We are informed that Bash & Gray, of Joplin, Mo., were awarded the contract for

laying 85,400 feet of 20 inch water supply pipe, for $33,300.

Rochester, N. Y.—Barr & Creelman, 74 Exchange street of this city, captured the contract for the plumbing and heating at the county jail addition at their bid of $5,396.

Cheyenne, Wyo.—It is reported that the contracts for the laying of water supply mains have been awarded to Doyle & Schwartz, Colorado Springs, Col., for 20,400 feet of 16 inch pipe, $6,324. This firm also was awarded the contract for 24,734 feet of 30 inch pipe, Consideration $11,625.

Springfield, Mass.—M. Cohen has been awarded the contract for the plumbing in a 28 apartment block, for Bernard Radding, at the corner of Carew and Chestnut streets; the plumbing in a twelve apartment block, for A. Carr, at 53 Bradford street and the plumbing in a twelve apartment block, for Mr. Radding, at Woodside Terrace.

Streator, Ill.—R. T. Shaw has been awarded the contract for remodeling the plumbing in the Streator postoffice building and has, in addition to having secured contracts for sanitary installations in residences for Frank Gahm and Robert Sproule, begun work upon the equipment of a plumbing system in the Streator Motor Car Works.

Boston, Mass.—Chase & Baker, of 98 High street, have the following heating and ventilating contracts on hand: A new high school in East Braintree, Mass.; a new high school in Westwood, Mass.; a new police station at Revere, Mass.; a new business block in Quincy, Mass., for Henry Kincaide, and a new apartment house in Cambridge for Mrs. Agnes McKenzie.

Boston, Mass.—McLeans & Cousens, of 204 Purchase street, have been awarded the contracts for the steam heating and ventilating in the new Longfellow and Peter Fanueil high schools being erected for the city of Boston; the new factory for the American Metal Polish Company in West Somerville; the Charlestown Five Cent Savings Bank, in Charlestown and the Boston Blind Babies' Home.

Westfield, Mass.—Luke S. Dunn has been awarded the following contracts: Plumbing, hot air heating and gas fitting in the A. P. Ackert residence and store building, on Church street; the plumbing and gas fitting in a three flat house for Joseph Kucewski, in White street; the plumbing, hot air heating and gas fitting in a new residence for J. J. Toole; the plumbing in a double house on Main street and the plumbing in a new summer residence at Woodmont, Conn.

Philadelphia, Pa.—Geo. B. Grey, 1041 Spring Garden street, of this city, has been awarded the contract for the plumbing in the new addition to Hotel Strand, Atlantic City. The contract calls for 60 complete bath-rooms with fresh and salt water to each, 49 additional lavatories in guest rooms, slop sinks and fire lines on each floor. In addition to this Mr. Grey has the contract for plumbing in parish house, 25th and Lehigh avenue, alterations to residences at 4035 Walnut street and 1925 N. Broad street. Also repairs to damages done by fire at Brilliant Sign Co., Ridge avenue and Hamilton street.

BOSTON AND NEW ENGLAND

Bridgeport, Conn.—W. J. Snadecki has been given the contract for plumbing the three-family house which Mathilda Potts is erecting.

Bridgeport, Conn.—A. E. Roberts has been given the contract for plumbing in a one-family house which Fred Card is building on Edna street.

Malden, Mass.—Hoffman & Weiner is the name of a new firm, which has opened a plumbing and gas fitting establishment at 335 Cross street.

Fitchburg, Mass.—The plumbers' strike which was started two years ago has just been declared off by the union men. They have agreed to the open shops.

Lynn, Mass.—The school department has awarded the contract for replacing the plumbing on the upper floors of the Shepard school to Nicholas and Drown Company.

Melrose, Mass.—Walter Lord, a plumber of Otis street, was burned about the face and hands a few days ago when the flames from his furnace ignited a can of gasoline.

Waterbury, Conn.—The Charles Thatcher Company has been awarded the contract for the plumbing and heating in the new residence to be erected on Elmwood avenue for Mrs. John Blair.

New Haven, Conn.—James F. Bruton has been given the contract for plumbing the frame block which is being erected at the corner of Woolsey and James streets for Coyne Brothers.

Morrisville, Vt.—The C. H. Goss Company, of St. Johnsbury, has been given the contract for placing a new heating plant in the Morrisville Academy. The contract price is given as $1,142.42.

Portland, Me.—Miller & Calhoun of this city, were the successful bidders for heating the childrens' hospital. The amount of the contract was $7,620. This firm also has the heating contract, $2,339, at Ft. Williams,, Me., in the artillery barrack.

Northfield, Mass.—H. M. Bristol has been awarded the contract for the plumbing and steam heating of the Hotel Northfield. The heating part of the contract he has already well under way. Mr. Bristol has recently purchased a new home which he is to occupy shortly.

South Deerfield, Mass.—L. A. Arms has quite an extensive contract of plumbing in the Lathrop hotel. He has also the plumbing and hot water heating of a private residence at Noth Hatfield, and a contract from the state for the building of 700 feet of double pipe railing.

Springfield, Mass.—T. J. Morris, who recently engaged in the steamfitting business on his own account on Lyman street, has been awarded the contract for the steam heating in the new plant being erected in Brightwood for the Blair Manufacturing Company.

Holyoke, Mass.—A. F. Cousneaus has secured the following contracts: Plumbing a double house on Chicopee street; a double house on Dusharm street; and the plumbing of four stores and is just finishing the

plumbing and water piping of the new dye house for the Farr Co.

Melrose, Mass.—P. M. Grovestein has been given the contract for installing a bathroom in the house at the corner of Trenton and Grundy streets, owned by Mrs. M. C. French. He has just completed the installation of water fixtures at the residence of H. M. Johnston at 86 Trenton street.

Palmer, Mass.—Whitcomb & Faulkner have been awarded the contract for heating the new High school building, on their bid, $2,136. Other bids were: The Holland Co., Springfield, $2,173; J. J. Cotter Co., Springfield, $2,210; P. J. Donnely, Holyoke, $2,350; E. Brown Co., Palmer, $2,600; Legro & Lyon, Palmer, $2,870.

Northampton, Mass.—The W. H. Riley Co. has several contracts on hand, among them the plumbing and steam heating of the new Talbot house on Prospect street, the plumbing and steam heating of the new addition to the Burnham school on Elm street; also the new dormitory and gymnasium, and the plumbing and steam heating of the new A. M. Boyden residence.

Rutland, Vt.—Connolly & Loveland, contracting plumbers, have greatly enlarged their place of business on Wales street. They have leased the store adjoining their former quarters and by cutting an arch through connected the two stores. The new quarters will be used principally to show bathroom fixtures. Connolly & Loveland have been at their present location for eight years.

"Along Woodward Avenue." This jovial bunch of mischief-makers was very prominent indeed at the recent annual convention of the National Association of Master Plumbers, held in Detroit, Mich. Shown in the group, from left to right, are: J. Stievater, of New Orleans; R. Dee Pierce, secretary of M. Glauber & Co., New York City; "Frederick" Fox, of Chattanooga, Tenn.; Mr. Kane, of Nashville, Tenn.; Billy Hurrah Marshall, representing the Universal Sanitary Manufacturing Company, of Newcastle, Pa., and Frank P. Keeney, secretary of "Domestic Engineering," of Chicago. The photograph was taken by our Mr. Winslow.

Springfield, Mass.—Contractors Horgross Bros. of Worcester, have been awarded the contract for the enlarging and improving the county court house, in this city. Contract price, $184,000.

Leslie Manufacturing Company of Boston, Mass., has been incorporated with $500,000 capital for the purpose of manufacturing and selling tools of all kinds. F. A. Burbeck, of Malden is president and E. H. Hadley of Boston, treasurer.

Nashua, N. H.—Proposals for plumbing, heating and ventilating the new commercial annex of the high school have been received by the mayor and building committtee as follows: Heating and plumbing—C. H. Avery & Co., $1,488.86; Jackman & Son, $1,572.00; A. E. Gay, $1,875.00; Buxton & Allard, $1,630.00, and O. P. Johnson, $1,700.00. Plumbing—C. H .Avery & Co., $449.91; Jackman & Son, $449.00; A. E. Gay, $455.00; Buxton & Allard, $458.00; O. P. Johnson, $508.00. The plumbing contract has been placed with Jackman & Son and the heating and ventilating contract with C. H. Avery and Co.

Boston, Mass.—The Isaac Coffin Company, of 52 Sudbury street, has been awarded the contracts for the steam heating and ventilating in a new building at the state institution, at Westboro, Mass.; a new parochial school at Attleboro, Mass.; Fontaine & Kinnicutt, architects, Pawtucket, R. I.; Arborway Court apartment house in Forest Hills, Mass., in which three hundred and twenty radiators will be placed; a new parochial school at Taftville, Conn., Chickering & O'Connell, architects, Boston; the new west pavilion at the Quincy hospital, Quincy, Mass., Edward F. Stevens, architect, Boston, and the Symms hospital in Arlington, Mass., from plans by the same architect.

Springfield, Mass.—The Holland Co. has a large list of contracts on hand, in which are the plumbing of the new Fulton residence and the new Wilson residence, both on Union street; the steam heating of the new Emanuel Training School at Chicopee, the plumbing in the Frank Lyman residence at Northampton, the hot water heating of Bishop Vinton's residence on Worthington street, the heating of the Episcopal church, the heating in the Park street church, the heating in a new block at Indian Orchard for O. A. Larivere, the hot water heating in a new residence for M. H. Millner, the steam heating in a new residence on State street for Wm. Simpson, the heating of a sixteen apartment house for Freedman, the plumbing and heating of a double house, also a cottage for E. L. Bates, the plumbing and heating of the new W. L. Baley residence and the heating and plumbing of a new double house for E. L. Northway.

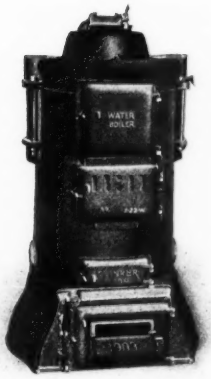
NEWS FROM MICHIGAN

Detroit, Mich.—Lenard and Peck, formerly of 711 Fort street, have moved into new and more spacious quarters at 390 Michigan avenue.

Detroit, Mich.—Roos & Wood, who have their very pretty display room and shop at 176 Myrtle street, report that business is very favorable. The following are some of the contracts which they at present have upon their books: Plumbing and heating for Ritter Mfg. Co., at N. Grand boulevard and Russell avenue.

New Outfits for Old.

"Nothing man-made is eternal," says Carlyle. Boilers, like other man-made contrivances, frequently outlive their usefulness, are too small, too old fashioned, too expensive to run to suit modern conditions. There are many of these obsolete types in every community; many perhaps in yours. Do you know how many, where they are, and when they will be replaced by modern IDEAL Boilers.?



An IDEAL Arco Water Boiler puts new life in the old house.

Many people "get along" with old heating equipment when they would install a modern, scientifically built IDEAL-AMERICAN outfit were the matter brought forcibly to their attention. This is profitable work for the heating contractor. It pays.

AMERICAN & IDEAL RADIATORS BOILERS

A Heating Outfit is More Efficient with NORWALL and SYLPHON SPECIALTIES

AMERICAN RADIATOR COMPANY

General Offices, 282-286 Michigan Ave., Chicago.

New York	Cincinnati	Cleveland	Atlanta	Brantford, Ont.	Denver
Philadelphia	Boston	Milwaukee	Minneapolis	Seattle	St. Louis
Pittsburg	Buffalo	Indianapolis	Kansas City	Omaha	San Francisco

plumbing and heating in new garage, at Woodward and Palmer avenues, and the plumbing and heating in the fine new residence of H. J. Houghty on Virginia avenue.

Mt. Clemens, Mich.—Geo. Sears has recently completed the plumbing and heating in the Bendford hotel; he is also doing the plumbing in the residence of Dr. Smith and the plumbing and heating in the Edison hotel.

Pontiac, Mich.—S. H. Burlingham is to be congratulated upon his fine new shop and display room, which, when fully completed and equipped will be one of the prettiest and most practical shops in this part of the state.

Detroit, Mich.—W. J. Rozell, of 2039 Woodward avenue, has the contract for the plumbing in the residence of Dr. James I. Murry, on Willis avenue, also for the plumbing in the summer home of Mr. Halstead, in Birmingham, together with a nice bunch of smaller work.

Detroit, Mich.—The contract for the plumbing in Michigan Alkali Works of Wayndott, has been awarded to the plumbing firm of Contant & Tetreau, at 733 Dix avenue. This live firm has also secured the contracts for the plumbing in two store buildings on Oakland avenue and the plumbing and heating in three residences on N. Grand boulevard.

Detroit, Mich.—P. E. Burau, of 690 Gratiot avenue, reports business picking up rapidly and as evidence we note the following from among his contracts—plumbing and heating in residence of A. Becker, on Canton avenue; plumbing and heating in residence on Helin avenue, for John Dusing, and plumbing and heating in residence for Henry Bive, on Townsand avenue.

Detroit, Mich.—J. A. Brisnahan, of 683 Michigan avenue, finds no reason for complaint these days. At present he is engaged in the installation of the plumbing in a cottage for Mr. Patty, on Vermont avenue, plumbing and heating in a flat building at 274-276 Avery avenue, plumbing in a flat on 15th street, and the plumbing in two residences on Hancock avenue and Martin court respectively.

Detroit, Mich.—Among the nice contracts that John Kramer, of 171 Monroe avenue, has upon his books are to be found the plumbing in a two-family flat for Father Dahuty, on Baker street near 14th; plumbing in two two-family flats on Meldrum avenue, for Mr. Richter; plumbing in residence of Chas. Kruvisch, on Garfield avenue, and plumbing in double flat for Mr. Kellor, on Lillibridge avenue.

Detroit, Mich.—Our old friend Paul Wenzel, of 1176 Gratiot avenue, has a number of nice contracts upon his books, among which are the plumbing and heating in a twelve-apartment flat for Mrs. Kuhn, at the corner of Entwine and Adams streets; plumbing in new building for Wm. Stephens, at the corner of Ferry and Braubim streets; plumbing in new factory for the Detroit Coin Wrapper Co., at corner of Reward and Harper avenues, and also a bunch of smaller work.

Pontiac, Mich.—S. H. Holtzer, having fully recovered from the recent convention at Detroit, was found up to his neck in work tussling with a pipe-threading machine, which the men said would not work. It is needless to say that the threads were soon cut when the old master took a hand. Mr. Holtzer is at present engaged in installing steam heat in the new Harnick store on N. Saginaw street, heating in North block and the plumbing and heating in John Bahy's new residence.

T. R. Mills.

TRADE LITERATURE

From George H. Fay Co., San Francisco, Cal.: "Taco Toilets," 16 pages, 7¼x7½ inches, printed on heavy highly glazed paper, and containing half tone illustrations, roughing in measurements, and list prices of its line of closets. When writing for this catalogue, kindly mention "Domestic Engineering."

From the Murchey Machine & Tool Company, Detroit, Mich: "Illustrated Catalogue," 46 pages, 6x9 inches, describing its line of nipple and pipe threading machines, roller pipe cutters, tapping machines, automatic opening dies and other specialties. The catalogue will be sent upon request, mentioning "Domestic Engineering."

From Warren, Webster & Company, Camden, N. J.: "Part Eight" of general catalogue, 80 pages, 6x9 inches, containing many half tone engravings and much specific information relative to its various patented heating specialties. The catalogue will be forwarded

BLANK FOR

Report of an Award of Heating or Plumbing Contract

(Cut out, fill in and mail promptly)

DOMESTIC ENGINEERING
Chicago

We have been awarded the contract for

_____
plumbing or heating

the _____, the
kind of building

amount of the contract being $_____

Owner's name _____

Address _____

Architect's name _____

Address _____

General Contractor's name _____

Address _____

Our own name _____

Address _____

promptly upon request, mentioning "Domestic Engineering."

From Geo. W. Heiland, of 99 and 101 Beekman Street, New York, N. Y.: "Illustrated Catalog E," 64 pages, 9x12 inches, containing illustrations, list prices, descriptions, etc., of plumbers' sundries, in brass, rubber and leather goods, nickel-plated brass bathrom fixtures and other patented specialties. When writing for this catalogue, kindly mention "Domestic Engineering."

From the X Specialty Co., 46 Weir street, Tauton, Mass.: "X Heaters," a twelve-page booklet, 4½x6¾ inches, containing numerous zinc etchings with descriptive matter in relation to the X heater manufactured by this concern and utilized for the purpose of heating water from surplus steam. A copy of this booklet can be obtained upon application mentioning "Domestic Engineering."

From the Loew Manufacturing Co., Cleveland, Ohio: "Loew," 40 pages, 5¾x8 inches, a catalogue in a very tasty cover of dark green and gold and printed upon highly glazed paper, with numerous half tone engravings. The various pipe threading machines and automatic devices manufactured by this concern are illustrated and described and list prices also are given. When you send for this catalogue kindly do not forget to mention "Domestic Engineering."

From the Detroit Lubricator Co., Detroit, Mich.: "1909 Catalogue of Sight-Feed Lubricators," 62 pages, 6x9½ inches, containing many outline cuts and half-tone illustrative of lubricators, brass and glass oilers, brass and oil pumps, oiling devices, injectors, throttle valves and many other specialties of the concern's manufacture, together with descriptions, tables and price list, will be forwarded upon application, mentioning "Domestic Engineering."

FROM THE THREADING MACHINE CO.

Sandusky, O.—A novel card 3½x5½ inches showing a fitter at work with one of this company's stocks and dies. By means of a push and pull arrangement at the side of the card this fitter can be made to work **(seemingly)** at a 2:04 gait, and if the rapidity with which he pumps the lever is any guide to the ease with which these stocks and dies are said to work, the shops possessing this tool should soon be dodging dollars.

A Great Engineering Feat.

At Kinlochleven, Kinross county, Scotland, a short distance directly north of Edinburgh, a gigantic feat of hydraulic engineering has been accomplished. This, in connection with a huge water scheme, is to be put in operation for the manufacture of aluminum. The method used for conveying the water is described by the London Graphic.

Near Loch Leven an artificial lake was formed and the water conveyed for three and one-half miles, through a covered conduit of reinforced concrete to a ridge overlooking the factories. There, the water enters into the "pipe track" shown in the illustration. This pipe track is 6,000 feet in length and each pipe is of welded steel, thirty inches in diameter and twenty

Quick Action—Fuel Economy

It's easy to see why the **Capitol Solar Boiler** possesses these two most important qualities. Examine the construction of the fire pot which is the basis of this construction. The inner wall is corrugated, increasing the amount of direct heating surface and improving air circulation at fire edges.
There are six drop legs or thin water-ways extending outward and downward over the fire. The fire is compelled to strike the legs all around because of the flue passage between the drop legs. The fire-pot therefore literally **absorbs** the heat from the fire, insuring quickest possible action; result fuel economy. **19 Sizes—Steam and Water.**
5 Diameters of Grate. Guaranteed Ratings.

United States Heater Company

General Offices and Works: Fort St. and Campbell Ave., DETROIT, MICH.

Branches:		Sales Agencies:
DETROIT	139 Jefferson Ave.	NORFOLK & RICHMOND, VA., Virginia-Carolina Supply Co
NEW YORK	129 Worth St.	MINNEAPOLIS, MINN., Plumbing & S. F. Supplies Co.
CHICAGO	34 Dearborn St.	ST. LOUIS, MO., L. M. Rumsey Manufacturing Co.
OMAHA	916 Farnam St.	DENVER, COLO., Kellogg & Stokes Stove Co.

feet in length, varying in thickness with the head of water.

The directors of the Loch Leven Power Company placed the order for this steel pipe amounting to some $545,000 with a firm in Germany, notwithstanding the efforts of the British manufacturers to land the con-

This picture shows the six huge steel pipes, each thirty inches in diameter and twenty feet in length, which convey the water from the top of the ridge seen in the distance. From photograph by London Graphic.

tract. Statement was made that no British firm could supply the pipe, but this was found to be untrue, as one British firm was at that time carrying out a contract for much larger pipe for a water works company in England. The reason why the contract went to outside parties was because the Loch Leven Company **obtained the pipes cheaper in Germany,** and thus best served their own interests.

PATENTS

925,501. Water-Heater. Ernest A. Peterson, Chicago, Ill.

925,534. Game Apparatus. Charles L. Tuthill and Charles C. Van Wormer, Aurora, Ill.

925,679. Compression Cock or Bib. Alfred R. Bonfield, Jr., Brooklyn, N. Y.

925,680. Nozzle-Holder. Edward Burns, New Britain, Conn., assignor to Beaton & Bradley Company, New Britain, Conn., a Corporation.

925,692. Valve. Egbert H. Gold, Chicago, Ill.

925,729. Valve. George F. Speer, Fort Worth, Tex.

926,093. Pipe-Bending Machine. Charles N. Brown, Boston, Mass., assignor, by mesne assignments, to American Circular Loom Company, Chelsea, Mass., a Corporation of Maine.

926,239. Reversible Valve for Flushing-Tanks. Albert H. Canfield, Bridgeport, Conn., assignor to The H. O. Canfield Company, Bridgeport, Conn., a Corporation of Connecticut.

926,263. Automatic Flush for Water-Closets. Lewis M. Lancaster, Philadelphia, Pa.

926,109. Feed-Water Heater and Purifier. Joseph W. Gamble, Philadelphia, Pa.

926,627. Stop-Cock. Joseph E. Van Nostran, Upper Sandusky, Ohio, assignor of one-half to J. W. Johnson.

926,435. Nozzle. Lewen R. Nelson, Peoria, Ill.

926,504. Lock-Nut. Peter Moodie, Malden, Mass.

926,653. Ratchet-Wrench. Joseph B. Hampton, Van Wert, Iowa. Filed Mar. 13, 1908.

926,137. Oil-Burner. Christian Y. Roop, Kansas City, Mo.

926,119. Greenhouse. Elbert A. Holt, Montgomery, Ala.

926,145. Trenching Device. Edwin M. Skinner, New York, N. Y.

926,142. Control-Valve Mechanism. George F. Schodde, Pittsburg, Pa.

926,095. Grate. Edwin R. Cahoone, Troy, N. Y.

926,190. Wall-Hydrant. Daniel Hunsberger, Boyersford, Pa.

926,272. Reamer for Thread-Cutters. Alexander L. Maxwell, Detroit, Mich.

926,512. Hydrant. Wallace L. Selleck, Brodhead, Wis.

926,400. Valve. Patrick J. Freaney, Indianapolis, Ind.

926,391. Thermostat Damper-Regulator. Ruel E. Dewey, Grand Rapids, Mich.

926,708. Soldering-Iron. Albert P. Olmstead, Watervliet, N. Y., assignor to Watervliet Novelty Co., Troy, N. Y., a Corporation of New York.

926,417. Strainer for Sinks, Bath-Tubs, &c. Samuel E. Horner, Ogontz, Pa., assignor of two-thirds to Richard W. Horner, New York, N. Y., one-sixth to Clayton E. Woodruff, Bridgeton, N. J., and one-sixth to Richard T. Brooks, Swartmore, Pa.

926,108. Combined Heater and Separator. Joseph W. Gamble, Philadelphia, Pa., assignor to Joseph S. Lovering Wharton, William S. Hallowell, and John C. Jones, doing business under the firm name of Harrison Safety Boiler Works, Philadelphia, Pa.

926,217. Fresh-Air-Intake Device for Heating Systems. Charles H. Smith and Michael F. Weidenbach, Minneapolis, Minn.; said Weidenbach assignor to Manuel-Smith Heating Company, Minneapolis, Minn., a Corporation of Minnesota.

Burlington, Iowa.—The Russell Sewage Disposal Co., of this city, furnished the Russell sewerless sewage disposal system installed at the First National Bank building in Marengo, Iowa.—Adv.